MAR 8 1920

VOLUME 38—N. S. VOL. 1 NUMBER 3

ARCHIVES
OF
DERMATOLOGY AND SYPHILOLOGY

(Succeeding the Journal of Cutaneous Diseases)

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MARCH, 1920

PUBLISHED MONTHLY BY AMERICAN MEDICAL ASSOCIATION, 535 NORTH DEARBORN STREET, CHICAGO, ILLINOIS ANNUAL SUBSCRIPTION, $8.00

Entered as Second Class Matter, October 30, 1917, at the Postoffice at Chicago, Illinois, Under Act of Congress of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on July 26, 1918.

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Archives of Dermatology and Syphilology

VOLUME 38—N. S. VOL. 1 MARCH, 1920 NUMBER 3

LABORATORY AND CLINICAL STUDIES BEARING ON THE CAUSES OF THE REACTIONS FOLLOWING INTRAVENOUS INJECTIONS OF ARSPHENAMIN AND NEO-ARSPHENAMIN

SECOND COMMUNICATION *

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AND
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PHILADELPHIA

INTRODUCTION

Since the introduction of the organic arsenicals in the treatment of syphilis, great interest has been manifested in the study of the systemic reactions following the use of arsphenamin and neo-arsphenamin, as well as in the underlying causes of these reactions. A considerable literature has grown up on this subject — much of it of a controversial character. While considerable light has already been shed, many practical and important phases of the problem are still obscure. These studies were undertaken with the view of aiding in the clarification of this complicated subject.

The literature concerning the earlier investigations need not be given in detail, as it has been reviewed by many writers. The more recent and meritorious studies of Danysz[1] are deserving of careful thought. In 1917 Danyzs published his ingenious "precipitation hypothesis" as an explanation of the causes of reactions following arsphenamin and neo-arsphenamin. He states:

> A short time after the injection of a disodium solution of arsenobenzol (arsphenamine) this compound loses the sodium which combines with the free carbonic acid forming sodium bicarbonate, leaving the arsenobenzol as an insoluble base. At the same time part of the arsenobenzol which remains as a mono- or disodium salt combines with the calcium phosphates, also producing

* From the Dermatological Research Laboratories, Philadelphia, Pa.

* Presented before the American Dermatological Association, Atlantic City, N. J., June 14, 1919.

1. Danysz, J.: Annales de L'Inst. Pasteur **31**:114, 1917.

an insoluble compound. The presence in the blood of free oxygen and sodium chloride hastens these transformations, while the organic bases contained in the plasma form with the insoluble deposit new soluble compounds.

In other words, Danysz advances the hypothesis that carbon dioxid and the sodium bicarbonate of the blood change arsphenamin into an insoluble base which is carried in the circulation until dissolved by the leukocytes and organic bases of the plasma. The biphosphates of calcium, sodium and magnesium, as well as the chlorids and iron salts of the blood, are alleged to behave similarly. Danysz regards the immediate effects of arsphenamin injections ("réactions du premier degreé") as due not to the toxicity of the drug, but to emboli caused by precipitates resulting from the presence of an excess of certain inorganic ingredients in the blood.

Experiment No. 1. Four solutions of luargol (a salvarsan-silver antimony compound) are prepared. No. 1 is a monosodium salt; No. 2 contains 1.5 molecules of sodium; No. 3 is the disodium salt; No. 4 contains half a molecule of sodium in excess of the disodium salt. From these solutions are prepared 1:5,000 dilutions in distilled water to which is added NaCl, 8 parts per 1,000, and biphosphates of calcium, 1 part per 10,000. The solutions are exposed to the air.

Solution No. 1 becomes turbid in a few minutes; solution No. 2 only after twenty minutes; solution No. 3 after five or six hours; solution No. 4 after twelve hours. When similar solutions are injected rapidly (in one minute) into the vein of rabbits, solution 1 produces fatal embolism in a dose of 0.1 to 0.2 mg. per kilo, whereas solutions 2, 3 and 4 are harmless in these doses.

Danysz concludes that the same product can be more or less toxic according as it precipitates more or less rapidly from its solution.

That calcium biphosphate in certain concentrations will precipitate solutions of monosodium arsphenamin in the test tube, or that unstable or turbid solutions will produce embolism is easily demonstrable. But to conclude from this experiment that an increase in the calcium biphosphate and other electrolytes in the blood is the cause of the immediate reactions is a supplementary assertion, which is not, in our opinion, borne out by the facts. Indeed, Jackson and Smith[2] injected intravenously into dogs large doses of various calcium salts and phosphates followed by arsphenamin without in any way increasing the toxicity of the latter. Of interest in this connection is the recent work of Lyman[3] showing that the calcium content of human blood is quite constant even in pathologic conditions. Jackson and Smith[2] have also studied the effect of an increased carbon-dioxid content of the plasma on the toxicity of arsphenamin. They have permitted dogs to rebreathe

2. Jackson, D. E., and Smith, M. I.: J. Pharmacol. & Exper. Therapy **12**: 221, 1918.

3. Lyman, H.: J. Biol. Chem. **30**:1, 1917.

the expired carbon-dioxid and have observed no influence on the toxicity of the arsphenamin injected, as long as sufficient oxygen was given. The work of Frothingham[4] has, moreover, established the fact that there is no increase in the plasma of bicarbonates in syphilis (and hence no acidosis). An important point not to be overlooked is that the rabbit is unsuitable for the study of this problem, being a herbivorous animal and having a metabolism which is different in many respects from the carnivorous.

From these considerations it is difficult to see, as Rieger[5] has also indicated, how the carbon-dioxid of the blood can abstract sodium from alkaline arsphenamin when it is injected intravenously, even though it may do so in the test tube.

In order to throw further light on this important problem, we have carried out a series of experiments, here recorded, which were designed to determine the verity of Danysz's hypothesis. We have incidentally brought to light a few interesting biologic and chemical properties of arsphenamin and neo-arsphenamin.

EXPERIMENTAL WORK

A. *The Alkalinity of Arsphenamin and of Neo-arsphenamin.*—As a method of orientation we studied the degree of alkalinity of arsphenamin as a possible source of its toxicity. This subject has already been extensively studied by Fleig,[6] Queyrat,[7] Danysz[1] and others. Solutions of acid arsphenamin form a precipitate with serum and hemolyzes red blood cells in vitro; they produce embolism and death on intravenous injection into rabbits. Alkaline (disodium) arsphenamin does not precipitate with serum in vitro and will not produce embolism when injected intravenously into rabbits, but will hemolyze red blood cells in vitro. Fleig[6] states that the phenomenon of precipitation in vitro occurs with disodium arsphenamin, but to a feebler degree than with solutions less alkaline. Joseph[8] states that precipitation in vitro never occurs with the use of alkaline solutions.

Jackson and Smith[2] regard the fall of blood pressure following the intravenous injection of alkaline arsphenamin into dogs as due to the alkali.

The importance of the proper neutralization of arsphenamin has been repeatedly referred to in the literature. Our own observations, as illustrated by the following experiment, emphasize this necessity.

4. Frothingham, C. Jr.: Arch. Int. Med. **18**:717, 1916.

5. Rieger, J. B.: J. Lab. and Clin. Med. **4**:181, 1919.

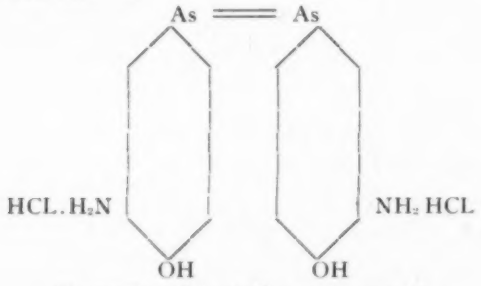
6. Fleig, C.: La Toxicité du Salvarsan (Monograph), Paris, 1914.

7. Queyrat, M. L.: Bull. et mém. de la soc. med. et des hôp. de Paris **38**: 229, 1914.

8. Joseph, Don R.: J. Exper. Med. **14**:83, 1911.

Experiment 1: April 7, 1919, 1 per cent. solutions of arsphenamin were prepared in doubly distilled water. Solution A was not neutralized—it represented acid arsphenamin. Solution B was neutralized with sodium hydroxid up to the point of clearing. This is monosodium arsphenamin. Solution C was neutralized in the same way as B and then one-third of the volume of the sodium hydroxid solution already used was added in excess. This is disodium arsphenamin.

The reason for this nomenclature is fully set forth by Danysz.[1] It will perhaps be advisable to indicate here briefly that the presence of two hydroxyl groups and two hydrochlorid groups in the arsphenamin molecule makes it necessary to add four molecules of sodium hydroxid to the acid solution before the latter can be considered completely "neutralized." This is done in practice as described in the preparation of solution C.



Formula of "acid" arsphenamin.

Each of the above solutions was sealed in a glass ampule in the absence of air and stored in a dark place for several weeks. After a few days the monosodium arsphenamin had turned a ruby red color and finally precipitated after two weeks' standing. The red solution on intravenous injection into white rats, was found to be much more toxic than the disodium arsphenamin which had remained clear and unchanged.

Monosodium arsphenamin becomes more toxic on standing than disodium arsphenamin. Neo-arsphenamin solutions are also unstable, turning to an orange-red color and precipitating in the sealed ampule after a few days. These experiments clearly emphasize the importance of the proper neutralization of arsphenamin before intravenous administration.

An attempt was also made to correlate the exact degree of the alkalinity of solutions of arsphenamin and of neo-arsphenamin (as indicated by their hydrogen-ion concentration), with their toxicity. For this purpose the colorimetric method of Sörensen[9] as modified by

9. Sörensen, S. P. L.: Biochem. Ztschr. **21**:131, 1909.

Clark and Lubs[10] was used. No conclusive data could be obtained. The p_H (hydrogen-ion concentration) of various lots of neo-arsphenamin is uniformly between 7.0 and 7.4, or practically the same as that of the blood. Acid-arsphenamin has $p_H = 4.7$, while the alkaline solutions are beyond $p_H = 9.0$. It was also observed that the decomposition of arsphenamin and neo-arsphenamin on exposure to the air is not accompanied by a change in their hydrogen-ion concentration.

B. *The Reaction of Arsphenamin and Neo-arsphenamin with the Salts of the Blood (the Hypothesis of Danysz).*—Having established a criterion for the correct method of neutralizing arsphenamin solutions, we tested some of the points involved in the hypothesis of Danysz. For this purpose a series of solutions containing the various inorganic and organic ingredients in the exact concentrations in which they occur normally in the blood,[11] were prepared in doubly distilled water. A "synthetic blood," containing many of the available organic and inorganic constituents in a menstruum of 0.5 per cent. egg albumin was also prepared. In order to determine the possible effects of increased concentration of electrolytes, we made similar solutions in concentrations twice that in which they occur in the blood.[12] The tests were arranged as follows:

Four series of test tubes of several rows each were prepared. The various solutions were pipetted in constant doses of 2 c.c. each. Acid arsphenamin and neo-arsphenamin were then added in increasing doses and the tubes were incubated in the water bath at 37 C. for one hour and observed for the occurrence of precipitates. The results recorded in tables 1 and 2 indicate that:

1. The phosphates of calcium, magnesium, sodium and potassium in the concentrations in which they occur normally in the blood, do not precipitate alkaline solutions of arsphenamin or neo-arsphenamin, either when tested alone or in the presence of the other inorganic and organic ingredients of the blood.

2. Sodium bicarbonate alone forms a faint flocculation with minute amounts of disodium arsphenamin, but the precipitate dissolves readily with the addition of greater amounts of the latter.

3. Acid arsphenamin precipitates very readily in the presence of many of the inorganic salts of the blood; the precipitate, however, disappears when an excess of arsphenamin is added.

10. Clark, W. M., and Lubs, H. A.: J. Bacteriol. **2**:1, 109, 191, 1917.

11. Matthews, A. P.: Physiologic Chemistry, 1916, New York, William Wood & Co., p. 462.

12. We are indebted to Mr. Joseph L. Gavron of these laboratories for assistance in carrying out some of these experiments.

4. Solutions containing even double the blood content of inorganic salts in an organic and protein menstruum do not form any appreciable precipitates with disodium arsphenamin in vitro. A faint flocculation which occurs occasionally with the first drop of arsphenamin, disappears when the second has been added.

5. Neo-arsphenamin is not precipitated by any of the organic or inorganic salts of the blood.

TABLE 1.—EXPERIMENTS ON THE DANYSZ HYPOTHESIS

Solutions	Parts per 1,000	Doses of Acid Arsphenamin				Doses of Monosodium Arsphenamin				Doses of Disodium Arsphenamin			
		0.1	0.5	1.0	2.0	0.1	0.5	1.0	2.0	0.1	0.5	1.0	2.0
Calcium acid phosphate..	0.193‡	—	—	—	—	—	—	—	—	—	—	—	—
	0.386	—	—	—	—	++	—	—	—	—	—	—	—
Sodium phosphate.....	0.457	++	—	—	—	—	—	—	—	—	—	—	—
	0.914	++	—	—	—	—	—	—	—	—	—	—	—
Potassium phosphate....	1.202	++	—	—	—	—	—	—	—	—	—	—	—
	2.404	++	++	—	—	—	—	—	—	—	—	—	—
Magnesium acid phosphate	0.137	—	—	—	—	±	—	—	—	—	—	—	—
	0.274	±	—	—	—	±	—	—	—	+	—	—	—
All four phosphates.....	Blood concentration	+++	++	+	—	..	..	—	—	..	..	—	—
	Double concentration	+++	+++	++	++	+++	++	++	++	++	++	++	—
Sodium bicarbonate.....	1.10	++	++	—	—	+	—	—	—	—	—	—	—
	2.20	+++	++	++	—	++	++	+	—	+	—	—	—
Sodium carbonate.....	0.231	++	—	—	—	—	—	—	—	—	—	—	—
	0.462	++	—	—	—	—	—	—	—	—	—	—	—
Potassium sulphate.....	0.205	+	±	—	—	—	—	—	—	—	—	—	—
	0.410	+	+	±	±	—	—	—	—	—	—	—	—
Potassium chlorid.....	2.062	—	—	—	—	—	—	—	—	—	—	—	—
	4.124	—	—	—	—	—	—	—	—	—	—	—	—
Ammonium salts*.....	0.11	—	—	—	—	±	—	—	—	—	—	—	—
	0.22	—	—	—	—	+	—	—	—	—	—	—	—
Artificial blood†.....	Blood concentration	+	—	—	—	±	—	—	—	±	—	—	—
	Double concentration	+	+	+	+	+	+	±	—	+	—	—	—

Technic: Two c.c. of each of the various solutions were placed into a series of test tubes and increasing volumes of arsphenamin were added.

* Ammonium Salts: chlorid, sulphate, phosphate and carbonate; each 0.11 gm. per 1,000 c.c.

† Made by dissolving in distilled water all the salts above enumerated and in addition NaCl 2.701, glucose 0.90, free NH_3 0.01, uric acid 0.02, urea 0.50 gm. per 1,000 c.c.

‡ All figures are parts per thousand. The first figure indicates the concentration in which the substance is usually found in the blood.

+++, strong precipitation; ++, marked precipitation; +, faint precipitation, ±, slightest flocculation; —, negative.

While it is illogical to infer what may take place in vivo on the basis of test-tube experiments, this much is evident: The hypothesis of Danysz is not supported by adequate laboratory experiments either

in vitro or in vivo. We are rather inclined to believe that when arsphenamin is properly neutralized, that is, when disodium and not monosodium arsphenamin is injected, precipitation in vivo does not take place. But we have even stronger evidence in the case of neoarsphenamin. This drug, even in 40 per cent. concentration, does not precipitate with serum or with any of the constituents of the blood; in proper dilutions (see above) it is not hemolytic; its acidity is like that of the blood ($p_H = 7.0$ to 7.4). Yet severe reactions have followed its administration in certain cases. Other factors must therefor be considered therewith.

TABLE 2.—EXPERIMENTS ON THE DANYSZ HYPOTHESIS

Solutions	Parts per 1.000	Doses of 4 per Cent. Water Solution of Neoarsphenamin			
		0.1	0.5	1.0	2.0
Calcium acid phosphate	0.193‡	—	—	—	—
	0.386	—	—	—	—
Sodium phosphate	0.457	—	—	—	—
	0.914	—	—	—	—
Potassium phosphate	1.202	—	—	—	—
	2.404	—	—	—	—
Magnesium acid phosphate	0.137	—	—	—	—
	0.274	—	—	—	—
All four phosphates	Blood concentration	—	—	—	—
	Double concentration	—	—	—	—
Sodium bicarbonate	1.10	—	—	—	—
	2.20	—	—	—	—
Sodium carbonate	0.231	—	—	—	—
	0.462	—	—	—	—
Potassium sulphate	0.205	—	—	—	—
	0.410	—	—	—	—
Potassium chlorid	2.062	—	—	—	—
	4.124	—	—	—	—
Ammonium salts*	0.11	—	—	—	—
	0.22	—	—	—	—
Artificial blood†	Blood concentration	—	—	—	—
	Double concentration	—	—	—	—

Technic as in Table 1.

C. *The Precipitation of Arsphenamin with Human Serum in Vitro.*—We have thought it advisable to reinvestigate this problem because of the importance which Berman[13] has attached to it in a recent publi-

13. Berman, L.: The Nitritoid Crises After Arsphenamin Injections, Arch. Int. Med. **22**:217 (Aug. 18) 1918.

cation. Acid, monosodium, disodium and neo-arsphenamin solutions were incubated with human serum in the water-bath at 37 C.

The following observations were made (see Table 3):

1. Acid solutions of arsphenamin in a concentration of 0.25 per cent. or greater, will precipitate in the presence of human serum in vitro.

2. Disodium arsphenamin is not precipitated.

3. Monosodium arsphenamin is precipitated when added in very small doses to human serum, the precipitate disappearing with the addition of large amounts of the alkali itself.

4. When arsphenamin is dissolved in physiologic salt solution instead of distilled water, the results are not appreciably different.

5. Neo-arsphenamin, even in 40 per cent. solution, is not precipitated in the presence of human serum.

TABLE 3.—Precipitating Action of Human Serum on Arsphenamin and Neo-arsphenamin

Lot No.	Reaction	Solvent	Percentage of Solution	Doses of Drug			
				0.2	0.4	0.6	1.0
2527	Acid	Water	2	S P			
2527	Acid	Water	1	S P			
2527	Acid	Water	0.5	S P			
2527	Acid	Water	0.25	S P			
2527	Monosodium	Water	2	F P	F P	F P	F P
2527	Monosodium	Water	0.5	F P	F P	F P	N P
2527	Monosodium	Water	0.25	F P	F P	F P	N P
2390	Monosodium	Salt*	2	S P	N P		
2390	Monosodium	Water	2	S P	M P	N P	N P
2390	Monosodium	Salt	1	S P	S P	F P	N P
2390	Monosodium	Water	1	S P	S P	M P	N P
2390	Monosodium	Salt	0.5	S P	S P	S P	S P
2390	Monosodium	Water	0.5	S P	F P	N P	N P
2390	Disodium	Salt	1	N P	N P	N P	N P
2390	Disodium	Water	1	N P	N P	N P	N P
2527	Disodium	Water	2	VFP	N P		
2527	Disodium	Water	1	VFP	N P		
2527	Disodium	Water	0.5	VFP	N P		
2527	Disodium	Water	0.25	VFP	N P		
Neo 153	Neutral	Water	4	N P	N P	N P	N P
Neo 153	Neutral	Water	2	N P			
Neo 153	Neutral	Water	0.5	N P			
Neo 153	Neutral	Water	0.25	N P			
Neo 231	Neutral	Water	40	N P	N P	N P	N P
Neo 231	Neutral	Water	30	N P	N P	N P	N P
Neo 231	Neutral	Water	20	N P	N P	N P	N P

S P = strong precipitation; M P = marked precipitation; F P = faint precipitation; N P = no precipitation. Constant dose of serum (2.0 c.c.) was used.
* Physiologic salt solution.

Rowe[14] observed in 1916 that there is an increase in the globulin fraction of the serum proteins in certain syphilitics. Berman[12] suggested that this increase may lead to their precipitation in vivo after the administration of arsphenamin.

14. Rowe, G. H.: Albumin and Globulin Content of Blood Serum, Arch. Int. Med. **18**:455 (Oct. 16) 1916.

We have repeated the experiments of Berman on a small series of our patients and have found that the slight opalescence (which occasionally occurs upon the addition of arsphenamin to the patients' serums in vitro) will clear up if the arsphenamin is correctly neutralized. We are, however, investigating this problem more intensively by refractometric methods.

D. *The Hemolytic Activity of Arsphenamin and Neo-arsphenamin.*—Since neither the hypothesis of Danysz nor of Berman will satisfactorily explain all of the cases of nitritoid reactions following intravenous injections of arsphenamin or neo-arsphenamin, we sought to ascertain to what extent other factors might play a rôle in this phenomenon.

The reports of Cavina,[15] Queyrat,[7] Sanes and Kahn,[16] and others of the occurrence of jaundice, urobilinuria and hematoporphyrinuria after arsphenamin administration, led us to study the hemolytic properties of this drug and of neo-arsphenamin.

The results of these experiments, recorded in Tables 4 and 5, show that:

1. Both acid and alkaline aqueous solutions are strongly hemolytic for defibrinated blood. The use of physiologic salt solution instead of distilled water as a solvent does not appreciably influence the results.

2. The hemolytic activity of arsphenamin varies with its concentration, but it is not directly proportional to it.

3. Neo-arsphenamin dissolved either in water or in physiologic salt solution, in concentrations ranging from 2 to 4 per cent., is not hemolytic for defibrinated blood, but will hemolyze the more fragile, washed erythrocytes in 1 per cent. suspension.

4. Very dilute solutions of neo-arsphenamin (0.5 per cent.) are strongly hemolytic for defibrinated blood when dissolved in distilled water but not in physiologic salt solution.

5. Highly concentrated solutions of neo-arsphenamin (30 to 40 per cent.) in distilled water are strongly hemolytic; 20 per cent. solutions, only slightly so.

DISCUSSION OF THE CAUSES OF IMMEDIATE REACTIONS

A. *Acid Solutions.*—The precipitation hypothesis of Danysz offers a satisfactory explanation of the cause of immediate reactions following the administration of acid or unneutralized solutions of arsphenamin. The drug is precipitated in the blood and is carried to the lungs where it causes embolism. If the solution is concentrated, death commonly results; if the patient lives, a bronchopneumonia is apt to develop.

15. Cavina, K.: Gior. ital. d. mal. ven. **58**:263, 1917.

16. Sanes, K. I., and Kahn, M.: Am. J. Syphilis **2**:529, 1918.

TABLE 4.—Hemolytic Activity of Arsphenamin

Lot No.	Reaction	Solvent	Percentage of Solution	Blood Used	Doses in C.c.			
					0.1	0.3	0.7	0.9
2527	Acid	Water	2	D B	C H			
2527	Acid	Water	1	D B	C H			
2527	Acid	Water	0.5	D B	C H			
2527	Acid	Water	0.25	D B	C H			
2527	Monosodium	Water	2	D B	C H			
2527	Monosodium	Water	1	D B	C H			
2527	Monosodium	Water	0.5	D B	C H			
2527	Monosodium	Water	0.25	D B	C H			
2390	Monosodium	Water	2	S	N H	C H		
2390	Monosodium	Salt*	2	S	N H	M H	C H	
2390	Monosodium	Water	1	S	N H	M H	C H	
2390	Monosodium	Salt	1	S	N H	C H		
2390	Monosodium	Water	0.5	S	N H	S H	C H	
2390	Monosodium	Salt	0.5	S	N H	N H	M H	C H
2527	Disodium	Water	4	D B	C H			
2527	Disodium	Water	2	D B	C H			
2527	Disodium	Water	1	D B	C H			
2527	Disodium	Water	0.5	D B	C H			
2527	Disodium	Water	0.25	D B	C H			

* Physiologic salt solution.

D B = freshly defibrinated human blood, 1 drop = 0.05 c.c.; S = 1 c.c. of washed human erythrocytes in 1 per cent. suspension, 1 c.c.; C H = complete hemolysis; M H = marked hemolysis; S H = slight hemolysis; N H = no hemolysis.

TABLE 5.—Hemolytic Activity of Neo-Arsphenamin

Lot No.	Solvent	Percentage of Solution	Blood Used	Doses of Solution of Drug (C.c.)					
				0.1	0.3	0.7	0.9	1.0	2.0
153	Water	4	S	N H	M H	M H	M H	M H	
153	Physiologic salt	4	S	N H	M H	C H	C H	C H	
153	Water	4	D B	N H	N H	N H	N H	N H	
137	Physiologic salt	4	D B	N H	N H	N H	N H	N H	
153	Water	2	S	N H	N H	M H	M H	M H	
153	Physiologic salt	2	S	N H	N H	M H	M H	M H	
153	Water	2	D B	N H	N H	N H	N H	N H	
137	Physiologic salt	2	D B	N H	N H	N H	N H	N H	
153	Water	1	S	N H	N H	N H	S H	S H	
153	Physiologic salt	1	S	N H	N H	N H	N H	S H	
137	Physiologic salt	1	D B	N H	N H	N H	N H	N H	
153	Water	0.5	S	N H	N H	N H	N H	M H	
153	Physiologic salt	1	S	N H	N H	N H	N H	N H	
153	Water	0.5	D B	S H	C H	C H	C H	C H	
137	Physiologic salt	0.5	D B	N H	N H	N H	N H	N H	
137	Water	0.25	D B	C H	C H	C H	C H	C H	
231	Water	40	D B	M H	M H	M H	C H	C H	C H
231	Water	30	D B	N H	N H	N H	S H	M H	C H
231	Water	20	D B	N H	N H	N H	N H	S H	C H

S = 1 per cent suspension of washed human red blood cells, 1 c.c.; D B = 1 drop, 0.05 c.c. of freshly defibrinated human blood. Methemoglobin production accompanied each case of hemolysis.

MacKee[17] in 1912 showed that the intravenous injection of arsphenamin in acid solution produced a precipitate, and caused a reaction in the patient which was proportional to the concentration of the solution and the rate of injection. He further demonstrated that in vitro the precipitate varied directly as the acidity and the concentration.

It has been shown by Auer[18] that the toxicity of acid solutions of arsphenamin is proportionate to their concentration. Joseph[8] demonstrated that acid solutions produce a precipitate in the blood which may actually be seen in the lungs and in the right ventricle of experimental animals. He assumed that emboli might develop in the capillaries of the lungs. Von Miessner[19] found on necropsy thromboses in the lungs of cattle suffering from hoof and mouth disease that had received acid solutions of arsphenamin. The alkaline solutions even in strong concentration did not produce precipitates. In a later communication Joseph[8] published experiments on the influence of acid solutions of arsphenamin on the blood in the test tube. One tenth of one per cent. solutions had no effect on the consistence of the blood, but in a concentration of one per cent. (0.6 gm. in 60 c.c.) or more, the precipitate may be so pronounced as to cause the blood to lose its fluid nature. Experiments carried out by Schamberg, Raiziss and Kolmer[20] indicate that non-neutralized or acid solutions of arsphenamin in 0.5 to 1 per cent. concentration are 50 to 60 per cent. more toxic in the white rat than the alkaline solution. In experimental animals, emboli can be clearly seen in the smaller veins and arterioles of the lungs (see photographs). Instances have also occurred in which symptoms followed by bronchopneumonia have developed in a series of cases, as in the groups reported by Schwerdtfeger and Tinker,[21] in which an alkaline solution of arsphenamin was administered in concentrated solution (about 0.5 gm. in 20 c.c.) the solution being presumably neutralized after the method of Ehrlich, namely, to the point of producing a clear solution. One can be quite sure that a precipitation of the drug in the blood took place, with embolism in the lungs, otherwise bronchopneumonia, with immediate cough and cyanosis, could not have been produced.

We have information concerning another group of cases (five in number) in which five full doses (0.6 gm.) of arsphenamin were mixed together and administered in 50 c.c. of water to each of five female patients. The physician (who was a new intern in a hospital) thought the solution was not as clear as it should have been, and being in doubt

17. Mackee, G. M.: Jour. Cutaneous Dis. **30**:199 (April) 1912.
18. Auer, J.: J. Exper. Med. **14**:497, 1911.
19. Von Miessner: Deutsch. med. Wchnschr. **37**:491, 1911.
20. Schamberg, Raiziss and Kolmer: Jour. Cutaneous Dis. **35**:286, 1917.
21. Schwerdtfeger and Tinker: Am. J. Syphilis **3**:398 (July) 1919.

as to the neutralization, added a few drops of a 10 per cent. solution of hydrochloric acid. Four of the patients had violent reactions, with rising temperature to 102 F., persistent vomiting, tachycardia and marked prostration. Râles developed in the chest, and there were marked substernal pains, exaggerated on breathing, and other symptoms of bronchopneumonia. The fifth patient exhibited no unfavorable symptoms while the dose was being administered, but when the patient rose from the table and took a few steps, she collapsed and died in a short time.

We have likewise a report of a death and several serious reactions with bronchopneumonia following the injection of a relatively concentrated monosodium solution of arsphenamin. Four ampules of 0.6 gm. arsphenamin were dissolved in 240 c.c. of water. A woman, aged 59, received 0.4 gm. About fifteen minutes after the injection she became short of breath and nauseated. She died one and a half hours after the injection in shock.

Another woman received 0.4 gm. from the same solution and did not exhibit symptoms until six hours later. Two men received 0.6 gm. One became short of breath soon after the injection. The other did not show symptoms until two hours later. These three patients developed shortness of breath, epigastric pain, nausea and some vomiting. They were fairly comfortable throughout the night but the next morning exhibited signs of beginning pneumonia; difficult breathing, cough, fever and a leukocytosis of from 17,000 to 23,000. The pneumonia lasted ten days and ended in recovery. As in the other cases referred to, we have here an embolism pneumonia, probably due to intravascular precipitation of the drug (0.4 gm. of monosodium arsphenamin was administered in 60 c.c. of water).

A physician in the West (in the fullness of his ignorance) communicated that he was able to produce a clear solution of arsphenamin without the addition of alkali. He therefore saw no necessity for using it. He stated that his patient had had no reaction whatsoever. Fortunately for the physician and the patient, 300 c.c. of water were used; this great dilution of the acid solution was the providential safeguard against a serious and perhaps fatal accident.

The clinical picture of pulmonary embolism after intravenous injections of the organic arsenicals is marked by a dominance of chest symptoms—severe pain in the chest, cough, cyanosis and collapse; other elements of the nitritoid reaction may, however, be associated. These may be flushing, localized edema of the skin or mucous membranes and pronounced apprehension.

B. *Concentrated Solution of Monosodium Arsphenamin (Arsphenamin Neutralized After the Manner of Ehrlich).* — The cases of bronchopneumonia reported by Schwerdtfeger and Tinker, after the

injection of concentrated alkaline arsphenamin, indicate that administration of such solutions may under certain circumstances lead to precipitation in the blood and the development of a bronchopneumonia. The three causative factors in such cases would appear to be the concentration of the solution, the insufficient alkalinization and possibly

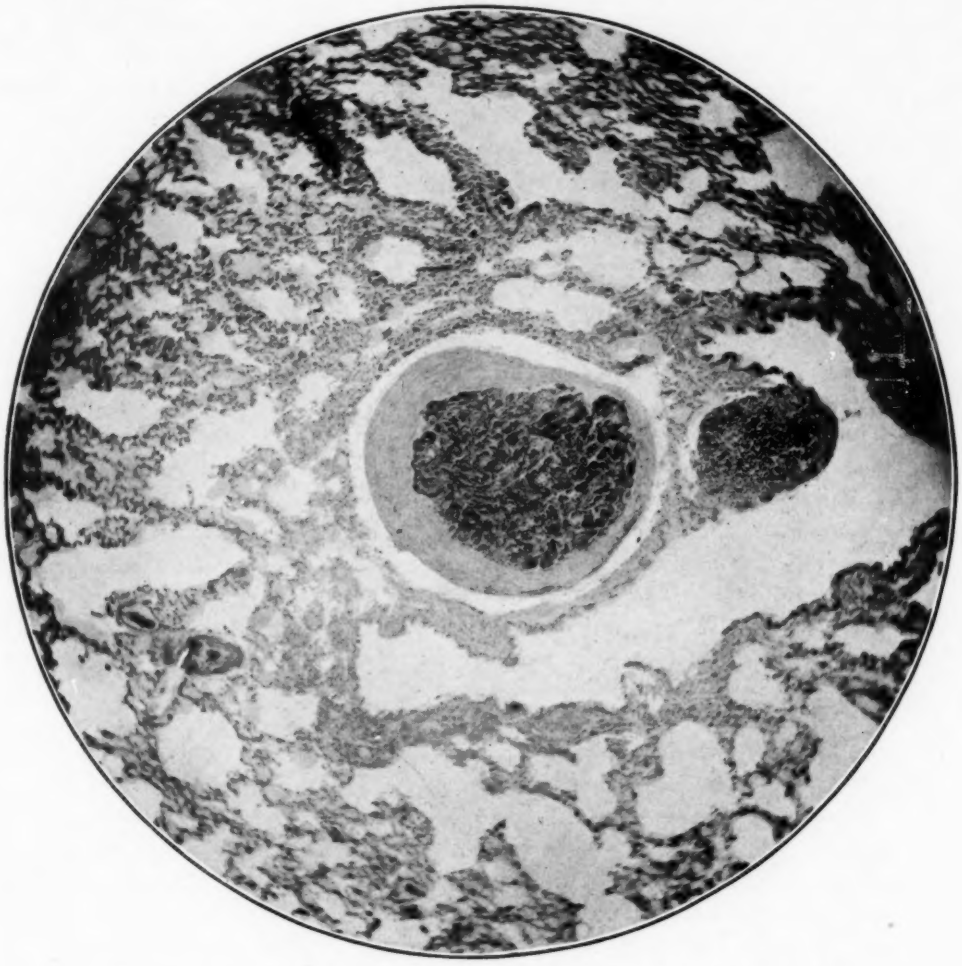


Fig. 1.—Thrombus in arteriole of lung following injection of acid solution of arsphenamin in rabbit.

too rapid injection. There is every reason to believe that a plentiful dilution would prevent such a reaction. It is probable also that an extremely slow and interrupted administration might avoid the difficulty. It is likewise probable that the use of a disodium arsphenamin, if not injected too rapidly, would prevent precipitation in the blood.

The immediate reaction, then, following the use of an acid arsphenamin solution or a concentrated monosodium arsphenamin solution, can be attributed to intravascular precipitation of the drug, with the production of multiple pulmonary emboli. Thus far the Danysz hypothesis is most satisfactory.

Neo-arsphenamin.—There is no evidence that neo-arsphenamin is ever precipitated in the blood. Our experiments demonstrate that no precipitation occurs when solutions of neo-arsphenamin are brought in contact with an equal quantity of blood serum in the test tubes. If precipitation be invoked as the cause of the immediate reactions (including the pulmonary embolism reactions and the "nitritoid" reactions without evidence of pulmonary symptoms), then there should never develop reactions of this type after administration of neo-arsphenamin. But such reactions are by no means uncommon. What is the explanation?

This discussion would not be frank if we did not immediately state that some of the most pronounced types of nitritoid reactions are seen after the injection of turbid or cloudy solutions of neo-arsphenamin. This turbidity means that some part of the drug is in fine suspension. This would appear to be a further confirmation of the theory of Danysz, as a precipitate exists in the fluid injection into the veins. Let us examine the resultant clinical picture.

Patients may first experience a sensation of tingling, stinging and burning over the cutaneous surface, the face and eyes become injected, and there may be swelling of the eyelids, lips or tongue. The patient complains of fullness and pain in the head, not infrequently nausea and an "all gone feeling." He feels as though he were going to die. Cramp-like pains in the abdomen and vomiting may be present. Some patients exhibit shortness of breath and cyanosis. The pulse becomes progressively weaker and may no longer be felt at the wrist. Syncope occurs and in rare cases convulsions. The patient presents an alarming ashy pallor and looks as though he were in extremis. Consciousness is as a rule soon regained, but the patient feels a pronounced lassitude and weakness. In rare instances, in debilitated or organically weakened patients, death may supervene. At times flushing may be absent and the symptoms may be chiefly those of collapse, much like shock. It would appear that a tremendous fall in blood pressure had taken place.

Cloudy solutions of neo-arsphenamin do not appear to give rise to symptoms particularly indicative of pulmonary embolism, and have not, to our knowledge, been followed by bronchopneumonia.[22] Could a precipitate pass through the small arterioles of the lungs and produce

22. Even after the severest "nitritoid" reactions following the injection of a cloudy solution of neo-arsphenamin, the patient does not experience any persistent symptoms.

emboli elsewhere? We leave the question for others to answer. The data which we have presented concerning the reactions following the use of cloudy solutions of neo-arsphenamin might be conceded to bear out Danysz's views, were it not for the fact that it is by no means rare to observe "nitritoid" reactions from the injection of perfectly clear solutions of neo-arsphenamin.

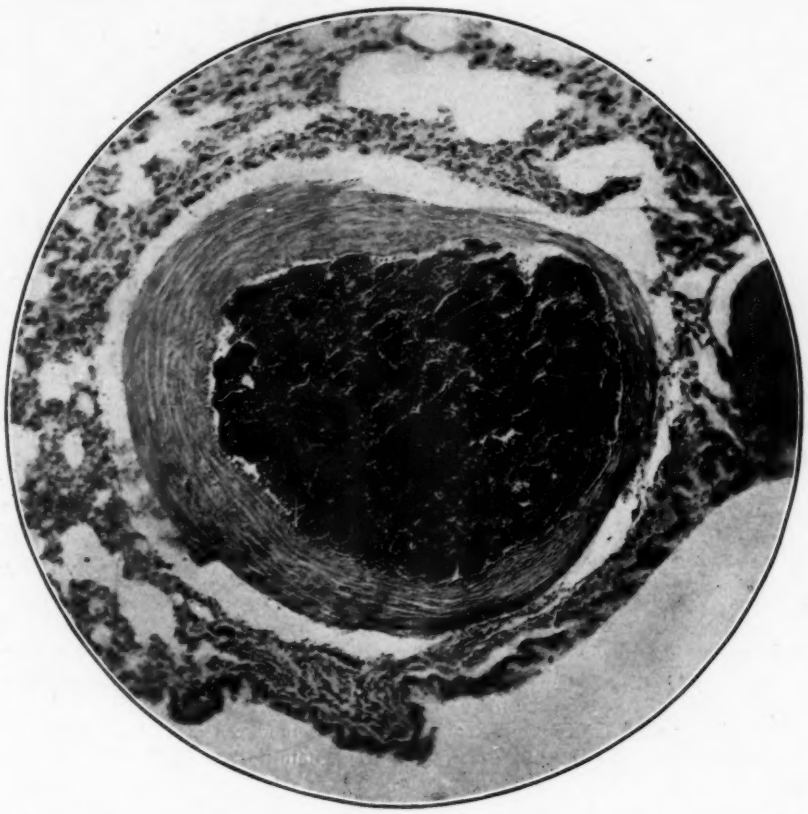


Fig. 2.—Thrombus in arteriole of lung following injection of acid solution of arsphenamin. Note curious structure of thrombus.

This is an observation that has been made by clinicians ever since the original German neo-salvarsan came into use. If intravascular precipitation of the drug is alleged to be the sole cause of the reactions in question and neo-arsphenamin is not precipitated in the blood, how can we account for the reactions?

Here Danysz invokes a supplementary hypothesis. He states "Novarsenobenzol (neo-arsphenamin) which is not influenced by carbonic acid, sodium bicarbonate and sodium chlorid, and which only forms compounds with sodium phosphate very slowly, is only pre-

cipitated in the blood stream under exceptional circumstances when the amount of phosphates in the blood is much higher than normal. Usually it is excreted without ever having become insoluble." We must respectfully submit that Danysz offers no experimental evidence of this assertion, and that the established facts in physiologic chemistry speak against it. Jackson and Smith, whom we have already quoted, actually injected into the veins of dogs large doses of phosphates, preceding the administration of arsphenamin, without in any manner increasing the toxicity of the drug. (It should be added that Danysz applied the above hypothesis with particular emphasis in connection with arsphenamin.) Furthermore, we have found that in the test tube neo-arsphenamin is not precipitated by any of the organic or inorganic salts of the blood. As the test tube experiments with acid arsphenamin solutions parallel the results observed in the living body, we may reasonably conclude that the same is true of neo-arsphenamin.

While the definite determination of the cause of the nitritoid and allied reactions is still not established, we are strongly of the belief that they relate to the drug. Clinicians of experience will all bear witness to the observation that certain lots of arsphenamin and neo-arsphenamin give a far higher incidence of nitritoid reactions than others. We do not believe that any physician with large experience in arsenotherapy would take issue with this statement. The incrimination of certain lots is reiterated again and again in medical journals. A published statement of Dr. John H. Stokes,[23] head of the department of syphilology in the Mayo Clinic, Rochester, Minn., is striking evidence of this. Stokes writes as follows:

> The question as to whether the entire phenomenon of allergic reaction to arsphenamin may be explained either by insufficient alkalinization of the solution or by peculiarities in the patient's blood serum can certainly not be regarded as completely settled. There remains to be explained the large body of observation on variations in the toxicity of arsphenamin itself. The proposal of Schamberg and his collaborators that there is a factor in the preparation of arsphenamin, an impurity of as yet unknown constitution, present in the drug, is not at all incompatible with an allergic explanation of the reaction. It is conceivable that it is not the arsphenamin base alone which precipitates, but the serum proteins as well, and that this precipitation of the serum proteins may be accomplished with especial ease even in comparatively normal persons, by a substance present as an impurity in the drug. No other satisfactory explanation can be found to my mind, for the extreme frequency of reaction to certain brands of the drug, and its extreme rarity under identical technical conditions in others. On my own service, in which the operators and the technic of operation remain unchanged for months and even years at a time, there can be no other satisfactory explanation for the fact that during 5,000 injections in which German preparations were used there were considerable periods when

23. Stokes, J. H.: Atropin and Induced Anti-Anaphylaxis, J. A. M. A. **72**:241 (Jan. 25) 1919.

scarcely a day passed without a nitritoid crisis, while in 7,000 subsequent injections in which arsenobenzol (Dermatological Research Laboratories), and novarsenobenzol-Billon have been employed, the nitritoid crisis has become so rare that we have been compelled to all but abandon the work necessary to confirm the results presented in this paper. We have, moreover, had the opportunity to observe the production of crisis by an accurately alkalinized but evi-

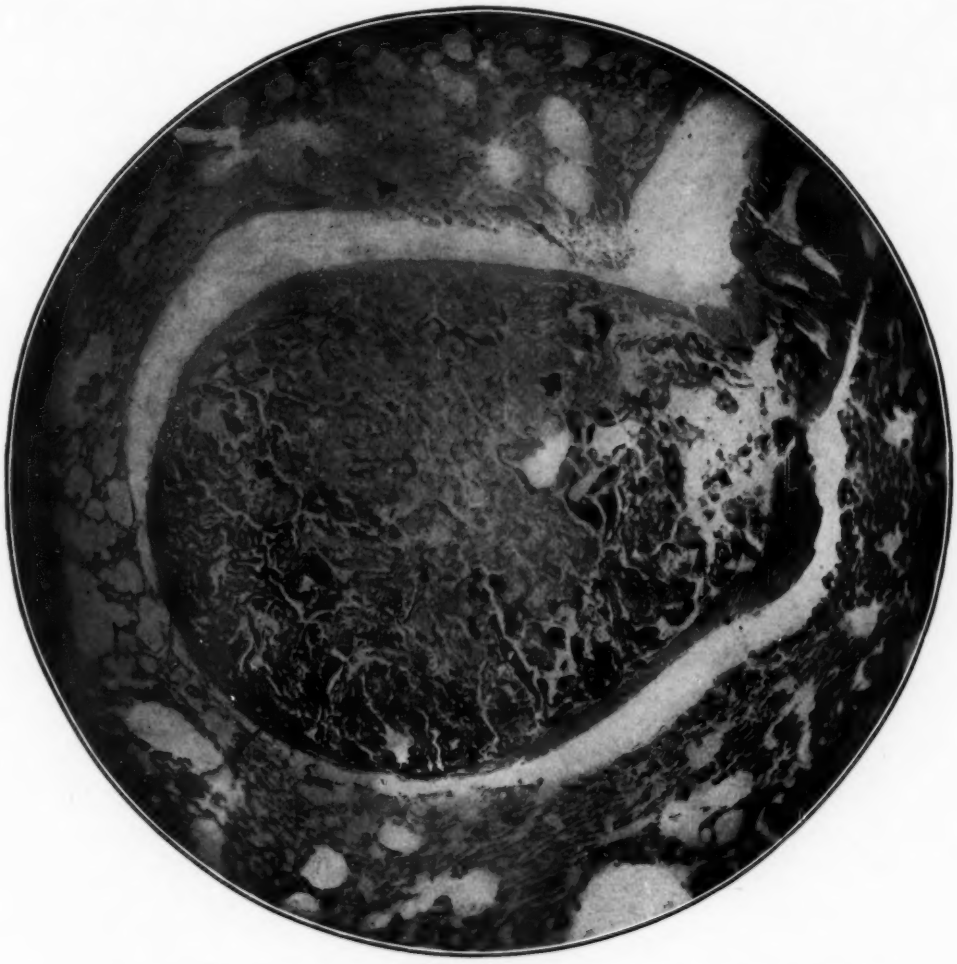


Fig. 3.—Thrombus in venule of lung following injection of acid solution of arsphenamin.

dently impure preparation used on the assurance of the manufacturers, in every one of five successive patients known not to present any personal idiosyncrasy to the drug. There can be little doubt in the mind of large users of arsphenamin that there is a factor of toxicity and a tendency to the production of anaphylactic response in certain preparations which cannot be explained in absolutely general terms, and is probably due to specific impurities.

Stokes is inclined to regard the nitritoid crisis as a form of anaphylactic shock and correlates the precipitation theory of Danysz with the newer conception that "anaphylactic shock may now be regarded as a change in the dispersion of the colloids of the blood serum." He believes that the reactions in question are explicable on physiochemical grounds as the result of a precipitation of the drug from its colloidal solution, or of the colloids of the blood plasma by the drug or by an impurity. He furthermore states that the nitritoid crisis can apparently be inhibited by a previous injection of atropin (gr. $\frac{1}{50}$), which he believes supports the view that the reaction is a form of anaphylactic shock.

It will be recalled that Swift[24] in 1912 carried out certain clinical and animal experiments which tended to indicate that the reactions following the use of the organic arsenicals might be of an anaphylactic character. A weighty observation against this view has been that nitritoid and allied reactions have at times developed after the first injection of the drug.

Berman[13] believes that precipitation of arsphenamin in the blood may be determined either by insufficient alkalinization of the solution or by the presence of an increased protein or globulin content of the blood of syphilitics. He states that in 300 administrations of arsphenamin, there were eleven nitritoid reactions, and that the serum of these reacting subjects precipitated arsphenamin in vitro while that of nonreacting patients did not. We have carried out some studies along these lines, and while they have not been sufficiently extensive to permit definite deductions, our impression has been that they do not tend to confirm the views set forth by Berman.

We furthermore contend that the above theory does not elucidate the nitritoid reactions following the use of neo-arsphenamin, for neoarsphenamin is not precipitated in the presence of blood serum.

The Substance X Theory of the Cause of Nitritoid Reaction.—In 1917, Schamberg, Kolmer and Raiziss,[20] after an experimental study of the toxicity of arsphenamin, announced their opinion that the nitritoid crisis was due to an unidentified impurity in arsphenamin and neoarsphenamin to which, for purposes of convenience and easy reference, the designation of Substance X was given. In a publication on this subject this statement was made: "Different lots of arsphenamine and neoarsphenamine vary in respect to the frequency with which they induce the immediate vasomotor and vasoparetic reactions. Few or no reactions of this character occur after the use of certain lots of the drug, and on the other hand, other batches seem to be followed

24. Swift, H. F., and Ellis, A. W. M.: The Intensive Treatment of Syphilis, J. A. M. A. **59**:1251 (Oct. 5) 1912.

by an unusual incidence of such reactions. . . . To be sure not all patients will exhibit vasoparetic reactions after the use of a poor product, nor will all remain free of these reactions after the employment of a relatively pure product. There are doubtless variations in susceptibility to *Substance X* and some patients will react against the minutest quantity, while others will do so only in the presence of a large amount."

One of the writers has used a lot of arsphenamin which could be given to the most susceptible subjects without inducing nitritoid reactions, while on the other hand another lot produced such reactions almost uniformly in patients who had previously tolerated the drug well. It is difficult to escape the conviction that a certain something which we have called Substance X, was present in the one compound and not in the other.

From further observations we are inclined to believe that Substance X is the result of a condensation or some other change in the amino group of arsphenamin. The presence of this impurity does not appear materially to increase the toxicity of the drug in experimental animals. Even in man the reactions produced are usually of an evanescent character. There is, to our knowledge, no method of determining the existence of Substance X by animal injections.

SUMMARY AND CONCLUSIONS

1. The ingenious theory advanced by Danysz that intravascular precipitation of the organic arsenicals is the cause of the reactions (particularly the nitritoid reactions) after intravenous injection is only in part true. It explains the well-known precipitation of solutions of acid arsphenamin and probably also concentrated solutions of monosodium arsphenamin (i. e., arsphenamin neutralized to the point of clearing). There is no adequate evidence, however, that precipitation occurs after the use of disodium arsphenamin (hyperalkaline solutions), and there is no evidence at all that neo-arphenamin is ever precipitated in the blood.

2. The mechanism which Danysz sets forth as the cause of the precipitation, namely, conversion of the sodium salt of the drug into the insoluble base through the interaction of the sodium salt with the carbonates, phosphates and other inorganic salts of the blood, is not supported by experimental evidence.

3. Experiments carried out by us indicate that the phosphates of calcium, magnesium, sodium and potassium in the concentrations in which they normally occur in the blood, do not precipitate alkaline solutions of arsphenamin and neo-arsphenamin in vitro, either when tested alone or in the presence of the other organic or inorganic constituents of the blood.

4. Sodium bicarbonate alone forms a faint flocculation with minute amounts of disodium arsphenamin, but the precipitate dissolves readily on the addition of greater amounts of the latter.

5. Acid arsphenamin precipitates readily in the presence of many of the inorganic salts of the blood; the precipitate, however, disappears when an excess of arsphenamin is added.

6. Solutions containing even double the blood content of inorganic salts in an organic and protein menstruum ("artificial blood") do not form any appreciable precipitates with disodium arsphenamin in vitro. A faint flocculation which occurs occasionally with the first drop of arsphenamin, disappears when the second drop has been added.

7. Neoarsphenamin is not precipitated by any of the organic or inorganic salts of the blood.

8. We believe that if arsphenamin is properly neutralized, that is, if the disodium and not the monosodium arsphenamin is injected, precipitation in vitro can scarcely take place.

9. Experiments on the precipitation of arsphenamin with human blood in vitro yielded the following results: (*a*) Acid solutions of arsphenamin in a concentration of 0.25 per cent. or more will precipitate in the presence of human serum in vitro. (*b*) Disodium-arsphenamin is not precipitated. (*c*) Monosodium arsphenamin is precipitated when added in very small quantities to human serum, the precipitate clearing on the addition of larger amounts, doubtless owing to the contained alkali. (*d*) When arsphenamin is dissolved in physiologic salt solution instead of distilled water, the results are not appreciably different. (*e*) Neo-arsphenamin even in 40 per cent. solution is not precipitated in the presence of human serum.

10. Experiments carried out on the hemolytic activity of arsphenamin and neo-arsphenamin demonstrate that: (*a*) Both acid and alkaline solutions of arsphenamin are strongly hemolytic for defibrinated blood. The use of physiologic salt solution does not especially influence the results. (*b*) The hemolytic activity of arsphenamin varies with its concentration, but is not proportional to it. (*c*) Neo-arsphenamin dissolved either in water or in physiologic salt solution, in concentrations ranging from 2 to 4 per cent., is not hemolytic for defibrinated blood.

11. The fact that arsphenamin is hemolytic in practically all of the concentrations in which it is employed and that neo-arsphenamin is not hemolytic except in very dilute solutions (0.9 gm. in 180 c.c. of water) or in extremely concentrated solutions (0.9 gm. in from 2 to 3 c.c.) sheds a degree of illumination on the relative manner in which these drugs are clinically tolerated. Another fact of importance is the hydrogen-ion concentration of these two compounds. The hydrogen-

ion concentration of neo-arsphenamin is 7.0 to 7.4 which is approximately that of the blood. That of acid arsphenamin is 4.7, while the alkaline solutions are beyond 9.

12. The injections of acid solutions of arsphenamin are prone to produce death, or if less concentrated, may lead to the development of a bronchopneumonia as a result of intravascular precipitation of the drug. Concentrated monosodium arsphenamin solutions may, under certain conditions, likewise cause death, or in the event of recovery cause an embolic bronchopneumonia. We have no knowledge that pneumonic symptoms have ever developed after the use of disodium arsphenamin, nor after the use of neo-arsphenamin.

13. The injection of cloudy or turbid solutions of neoarsphenamin will almost invariably give rise to severe nitritoid symptoms in which syncope and shock-like collapse are the outstanding features. No pulmonary symptoms follow. Neo-arsphenamin (and of course arsphenamin) should never be administered unless the solution is perfectly clear.

14. Nitritoid reactions may at times follow the injection of a clear solution of neo-arsphenamin. As neo-arsphenamin is never in our opinion precipitated in the blood, the elucidation of the cause of such reactions must be sought elsewhere.

15. Our studies lead us to reiterate the view previously expressed by us that the nitritoid reactions are related to some inherent property of the drug. In no other manner could the variation in the incidence of reactions with different lots and different brands of the drug be explained. We believe the cause to be traces of an unidentified impurity which for purposes of convenience and easy reference, we have designated Substance X.

NEUROTIC EXCORIATIONS

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The modern use of the term neurotic excoriations is limited to traumatic lesions produced by a person without intent to deceive. Some of these persons appear to possess normal nervous systems; most of them are more or less neurotic, and a few are hysterical. The affection is more common in females than in males. It is usually encountered between the ages of 18 and 50.

At times the excoriations may be produced by the habit of picking at every slight elevation on the skin. This picking or digging may be quite unintentional and, in mild cases, it is limited to an unconscious habit of passing the hand over the face (and the scalp, if bald) while deeply absorbed in study, locating a little follicular plug and digging with the finger nail until an excoriation is effected. In the same way the reparative crust is repeatedly removed, healing is retarded and the lesion may persist for weeks or months, becoming perhaps indurated or infected, and finally, when left alone, disappearing spontaneously, often with scar formation. In these mild instances the habit, which is really unconscious, is overcome by remonstrations by members of the family before much harm is done.

THE MORE PRONOUNCED CASES

In the more pronounced cases the habit is not controllable and the person finds it difficult, if not impossible, to avoid picking at little islands of epithelial débris, follicular plugs, comedones, stubby hairs, acne lesions, milia, crusts, etc. The point to be emphasized in this type is that the patient has no reason, other than a nervous habit, for interfering with nature. It is the same kind of impulse that makes one bite the nails, chew the mustaches, bite the lips, suck the thumb, etc.

MANIA FOR REMOVING SUPPOSED FOREIGN BODIES

Another type is when the person has a mania for picking at lesions of various kinds for the purpose of promoting healing, to remove

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* Read before the American Medical Association, Section on Dermatology, Atlantic City, N. J., June, 1919.

supposed foreign bodies, insects, etc. Unlike the former type there is here a definite reason for the act. As an illustration, a person becomes convinced that a milium body contains an insect. The lesion is opened and part of its contents removed, considerable excoriation being produced. A scab quickly forms, the uncomfortable feeling of which is supposed to indicate that the cause has not been overcome. The scab is then removed and little pieces of fibrous tissue and a little serum is obtained by picking and squeezing. Temporary mental rest is obtained, but soon the lesion feels again uncomfortable and the process is repeated over and over again until unsightly ulcers and scars are produced. The point to be emphasized here is that the person purposely injures the skin and has a definite reason for so doing, but there is no effort to deceive.

There is still another type of excoriation, namely, that associated with chronic itching dermatoses such as dermatitis herpetiformis, prurigo, chronic urticaria, pediculosis, etc. Here, however, there is no habit or mania, but simply vigorous attempts at relief from severe itching. Such cases cannot be classified as neurotic excoriations. On the other hand, there are instances, in neurotic individuals, in which the itching accompanying a mild urticaria or pruritus is markedly intensified by the peculiar temperament, and in which the scratching and digging is entirely out of proportion to the subjective symptoms. Such cases can very properly be classified under neurotic excoriations — a secondary type.

VARIOUS REASONS ASSIGNED FOR INJURING THE SKIN

Different persons have various reasons for injuring the skin, and this has led to the use of a number of terms in an attempt at dermatological designation. E. Wilson was the first to employ the term neurotic excoriations. Under this heading, as pointed out by Adamson, he included not only cases similar to the foregoing, but excoriations in hysterical women produced by rubbing with intent to deceive — true malingering. It is essential that a clear distinction be made between these two affections. Malingering (dermatitis factitia, dermatitis artefacta, dermatitis ficta, feigned eruptions) is when the person produces lesions by friction, with acids or in other ways, and denies the act. The lesions are caused to avoid work, to excite sympathy and for similar reasons. In the neurotic excoriations the patients may be unable to overcome the habit, but they readily admit the self-infliction of the lesions and will always explain the reason, sometimes at great length and detail. There is never any attempt at deception and no effort to excite sympathy or to avoid work. In fact, most of these individuals earnestly welcome an attempt to aid them in overcoming the habit.

The name "acne urticata" was proposed by Kaposi to indicate a condition in which wheals and pruritic papules occur in neurotic persons and in which the incessant rubbing and scratching results in excoriations. Adamson, in discussing Kaposi's cases, makes a very good point when he suggests that the wheals and the papules, instead of being primary, may be secondary to the rubbing. The famous dug-out cases of Colcott Fox probably belong to this group. Whether or not these cases are really a form of urticaria, prurigo or some other affection, the facts are that there is itching which is either very severe or that slight itching is extremely annoying to the neurotic and even hysterical person, and that the excoriations and ulcers are produced in mild attempts to relieve the symptoms.

Brocq, under the title of excoriated acne (l'acné excoriée des jeunes filles) describes excoriations in young neurotic girls who have or who have had acne vulgaris. The picking may vary from a habit to a mania.

Adamson[1] reviews the literature of neurotic excoriations and thus classifies the various types:

Group 1. Neurotic excoriations of hysterical women or malingerers (Wilson).

Group 2. Acne urticata (Kaposi) or dug-out excoriations (Fox).

Group 3. Excoriated acne (Brocq).

For clearness of definition it would seem preferable to omit entirely those cases falling under the heading of malingering and to include under the title of neurotic excoriations only those examples in which there is no intention to deceive.

In addition to the types already discussed, must be mentioned several other conditions that are not infrequently associated with excoriations and ulcers. Acarophobia is when the patient is convinced that he is infested with insects. There may be no lesions, but the individual will collect tiny particles of wool or cotton adhering to the skin, epithelial débris and even extraneous insects and exhibit them to the physician. In attempting to destroy and collect these supposed insects or to relieve imaginary symptoms produced by them, the skin is likely to be injured. Similar lesions may occur when extracting or breaking the hairs in trichotillomania (Besnier) and in trichokyptomania (Sutton). The term "dermatothlasia" was employed by Fournier to indicate a mania for scratching and rubbing various parts of the body, excoriations often resulting. Also in the literature one finds the terms "dermatits gangrenosa," "pemphigus hystericus," "urticaria necrotisans," and several others, but they all designate one of two types — either malingering or neurotic excoriations.

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1. Adamson: Brit. J. Dermat. **27**:1 (Jan.) 1915.

REPORTS OF CASES

CASE 1.—A woman, aged 30; married; educated and well bred; distinctly neurotic. There was a single, round, deep, punched-out ulcer on the right cheek close to the ear, which had been present for two years. The ulcer was indolent. The floor was dry and glistening with no granulation tissue. The margin was sharply defined, abrupt and felt hard to the palpating finger. The lesion resembled a third-degree radiodermatitis and suggested, also, epithelioma. The most striking features were the dry base and freedom from granulations. When questioned the patient willingly admitted that she stood close to a mirror for several hours every day and removed pieces of granulation tissue with a pair of thumb forceps. The excuse for the digging was that when left alone the lesion would feel uncomfortable and that it always felt better after these daily operations. Furthermore, she believed that these tiny pieces of tissue were interfering with healing, that they represented the etiologic factor and that they were causing the uncomfortable sensation. She admitted that at times she felt that the incessant digging was preventing healing, but that she simply could not leave the lesion alone more than a few hours at a time. In spite of the fact that the ulcer had been present for two years her husband did not know of its existence. She had succeeded in hiding it by clever hair dressing. It was difficult to ascertain the reason for the original digging, but judging from the patient's statements it was apparent that there was at first a milium body or a single acneiform lesion. There had never been more than this one lesion. In spite of the fact that the patient realized that discovery meant an end to domestic happiness, she could not stop the digging. After a few visits, during which time there was no improvement in the ulcer, the patient sought advice elsewhere. With the exception of this mania the patient was apparently normal.

CASE 2.—A man, aged 40; intelligent; slightly neurotic. Fifteen years previously the patient had had a chancre and secondaries and had received injections of mercury salicylate for two years. One year previously he had developed an eruption on the right cheek which was diagnosed as syphilis, but it did not respond to arsphenamin and mercury. This lesion was still present at the time he first visited the author.

At first glance, at a distance, the diagnosis was an ulcerating, nodular syphilid. The entire lesion was palm sized and situated in the bearded region of the right cheek, over the mandible. It consisted of an area of pigmentation in which were a number of split-pea to dime-sized, punched-out ulcers, between which were numerous scars of the same size. On close inspection the ulcers were seen to be dry; the floors were glazed; there was no granulation tissue, and the margins were hardened. Here and there throughout the affected area were numerous connecting, serpentine, narrow grooves or gutters, about ⅛ of an inch in width and ranging in length from ¼ to ½ inch. These grooves had the same general clinical characteristics possessed by the ulcers except that they were not as deep. When accused the patient admitted picking and digging at the lesion and exhibited a pair of forceps and a small pocket mirror. He stated that he spent several hours daily removing small pieces of tissue but particularly in removing hairs. He felt convinced that "ingrowing hairs" was the cause of his trouble and he would daily dig deep into the tissue in a search for such hairs. It required some time to convince him that the lesion would heal spontaneously if left alone. Finally, however, he controlled his mania; the ulcers healed with scars, and the pigment disappeared.

Case 3.—A woman, aged 45; highly educated; very nervous and neurotic. The patient exhibited perhaps a hundred lentil to split-pea sized scars scattered over the forehead, cheeks and chin. There were numerous crusted nodules, excoriated papules and split-pea sized open and crusted ulcers. Also, there were numerous milium bodies. The patient admitted that each inflammatory lesion was originally a milium body. These bodies annoyed her because she thought they contained a worm and according to her statement they would never disappear nor would the inflammatory lesions heal until the worm was totally destroyed. Consequently she would dig for days, weeks and months until she was mentally satisfied, then the lesion would heal leaving a cicatrix. It was impossible to overcome her mania. The only way the inflammatory lesions could be avoided was to have the patient come to the office whenever a milium body appeared. But even after destruction of the milium the patient would often work at the wound and prevent healing. She was finally referred to a neurologist and when last seen there was some improvement.

Fig. 1 (Case 8).—Superficial, deep excoriations and scars.

Case 4.—An unmarried woman, aged 35; teacher; neurotic. This patient was an acarophobiac. The evolution of each lesion was as follows: A sting is felt. On immediate examination nothing is seen, but after a few minutes a red punctum develops. Then, by the use of friction instruments (pin or needle) minute insects or pieces thereof can be obtained. The lesion rapidly develops from a punctum to a superficial, crusted excoriation the size of a split pea or a dime, with surrounding erythema. The condition had lasted about two months. Old lesions healed and new ones developed. When first seen there were twenty lesions in various stages of evolution and involution scattered over the body. The patient presented numerous specimens for microscopic study. These consisted of pieces of epidermis, pieces of crusts, blood

clots, etc. Among the specimens, however, were two insects, but these insects were not of the kind that bother the human race.

CASE 5.—A married woman, aged 30; neurotic. The patient, a very intelligent woman, had an excedingly mild type of what Engman and Mook call seborrheic acne—an oily skin with occasional acneiform lesions. She simply could not resist the temptation of digging at the papules with the result that there were always a few superficial and deep excoriations scattered over the face which, when finally left alone, would heal with resultant cicatrix. The reason for picking and squeezing was because temporary relief from the annoying symptoms could be obtained by releasing the contents of the lesion. About the best explanation that could be obtained relative to the subjective symptoms was that the lesions were uncomfortable. In spite of a real mental effort the patient could not leave her face alone. The roentgen ray was employed with the result that there was no further development of papules, but the patient

Fig. 2 (Case 8).—Absence of active lesions after the patient was able to control the mania, with the aid of the roentgen ray.

was always able to find something to dig at, not constantly, but somewhat periodically. When last seen she was free from lesions.

CASE 6.—An unmarried woman, aged 22; student; not neurotic. The patient had an exceedingly mild acne with an occasional lesion. She would endeavor to open the lesions with the result that a small papule, comedone or pustule was converted into an unsightly inflammatory nodule or excoriation. Her face was quite badly scarred. She had no reason for the picking other than an attempt to remove the cause of the lesion. There were no subjective symptoms. When advised to do so, she ceased interfering with the lesions; local and hygienic measures cured the acne, and her troubles were at an end.

CASE 7.—A married man, aged 50; intelligent business man; not neurotic. The patient had a habit, when reading, of running his hand over his forehead and scalp (bald) and picking at every slight obstruction, such as a stubby hair, a follicular plug, etc. Frequently this picking would result in a superficial excoriation. Then the crusts and scabs would be torn off repeatedly until inflammatory, slightly ulcerating nodules were formed. When first seen the eruption markedly resembled acne varioliformis and was treated as such. Later, when the true nature of the dermatosis was established, the simple expedient of wearing a cap of a size sufficient to cover the affected parts when reading terminated the trouble.

Fig. 3 (Case 9).—Lesions consisting of scars, pigmented macules, excoriations, crusts, pustules and ulcers. The eruption was generalized.

CASE 8.—A man, aged 30; uneducated; neurotic. This case, in practically all its aspects, was similar to Case 5, except that the patient was able to control the habit or mania, especially with the aid of the roentgen ray (Figs. 1 and 2).

CASE 9.—A woman, aged 35; uneducated; neurotic. The patient complained of various subjective symptoms such as itching, creeping sensations, etc., but her testimony was entirely unreliable. She admitted picking, digging and squeezing the lesions and gave all sorts of reasons for so doing. The lesions consisted of scars, pigmented macules, excoriations, crusts, pustules and ulcers.

Fig. 4 (Case 10).—Eruption similar to that exhibited in Figure 3, except that the ulcers were much larger.

The eruption was generalized. There was no attempt at deception, the digging being done for the purpose of relieving subjective symptoms. Therefore, it was not a case of malingering, and since there was no entity such as pediculosis, dermatitis herpetiformis, prurigo or other known chronic itching

Fig. 5.—Appearance of the arms and the upper back of patient in Case 10 (compare Fig. 4).

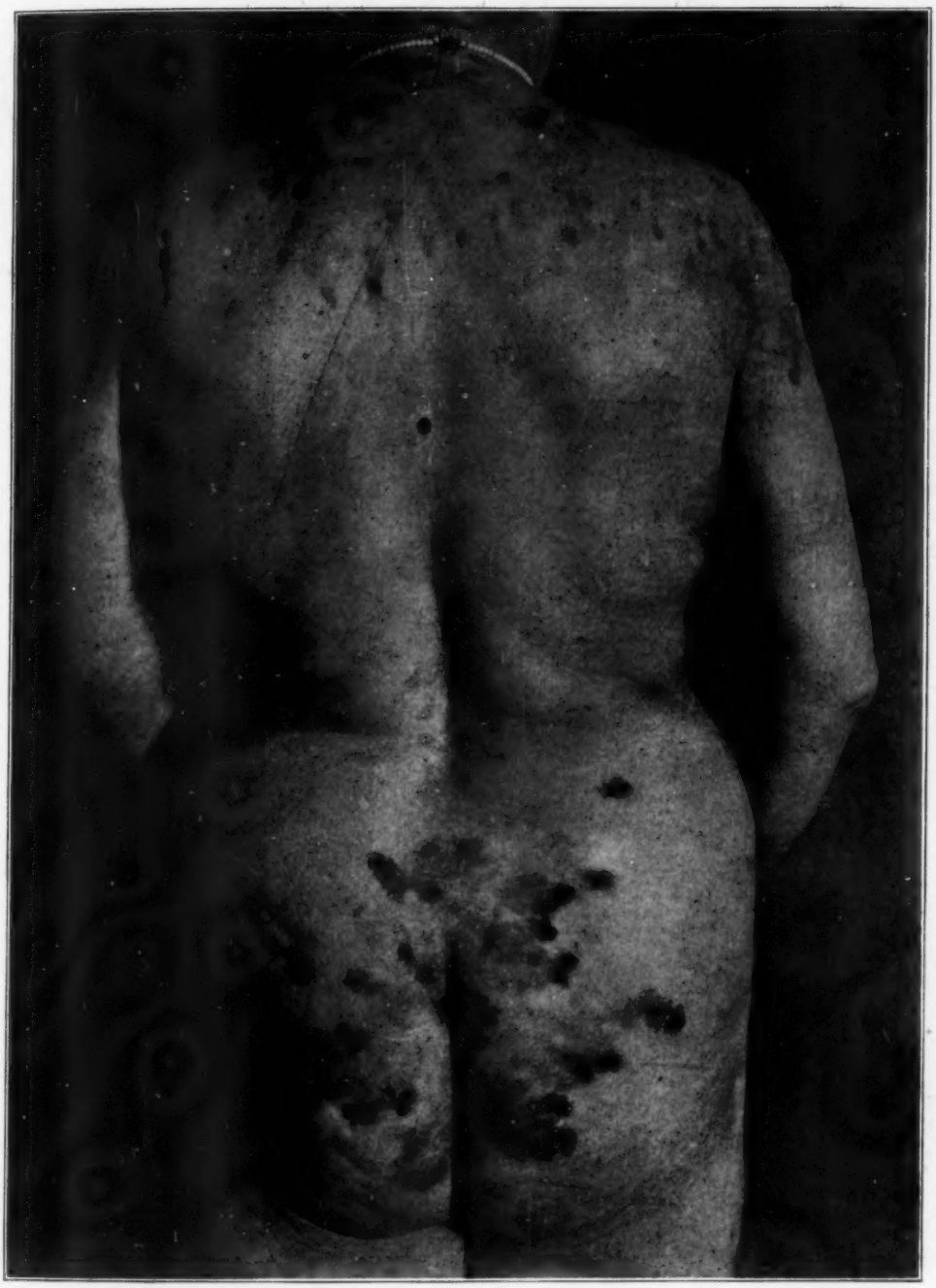

Fig. 6 (Case 11).—Eruption on the buttocks consisting of gyrate, pigmented, crustaceous and ulcerating lesions; similar lesions on the upper back.

affection, it would seem proper to place the case in the category of neurotic excoriations secondary, perhaps, to a mild generalized pruritus occurring in a neurotic subject (Fig. 3).

Case 10.—A married woman, aged 40; uneducated; neurotic. This patient's eruption was similar to that exhibited by Case 9, except that the ulcers were much larger (Figs. 4 and 5).

Case 11.—A woman, aged 40; uneducated; neurotic. The patient had an eruption on the buttocks consisting of gyrate, pigmented, crustaceous and

Fig. 7 (Case 12).—Eruption on abdomen, arms and thighs, consisting of scars, pigmented macules, crusts, nodules and ulcers.

ulcerating lesions, which resembled a syphilid. On the upper back there were similar lesions, but here there were numerous, parallel pigmented and crusted scratch marks. The patient admitted constantly digging at the lesions to obtain relief from severe itching (Fig. 6). The patient being exceedingly neurotic and as there was no definite disease entity, it seemed proper to place the case under the neurotic excoriations secondary, perhaps, to a pruritus of unknown origin.

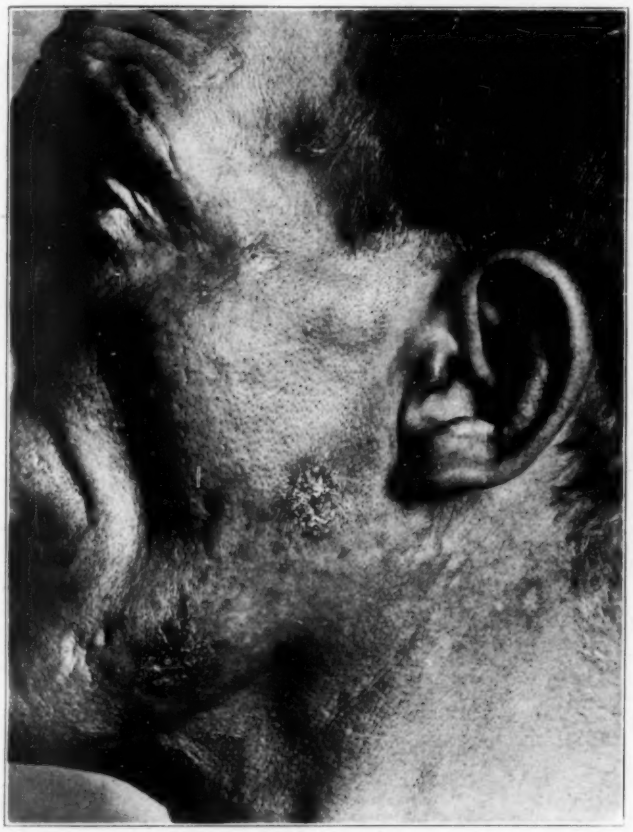

Fig. 8 (Case 13).—Crusted excoriations and scars.

CASE 12.—A private soldier, aged 23; neurotic; duration of eruption, six months; distribution: abdomen, arms and thighs. The dermatosis consisted of scars, pigmented macules, crusts, nodules and ulcers. The lesions were produced by digging with the finger nails and forceps for the purpose of obtaining insurance—a malingerer (Fig. 7).

CASE 13.—A man, Italian, aged 40; uneducated, somewhat neurotic; a laborer. There were numerous irregular scars scattered over both cheeks, the chin and the forehead. There were a number of active lesions scattered over the face. These lesions were from split pea to dime size, edematous, inflammatory, eroded, exudative and crusted. There was some pigmentation. The duration of the

eruption was two years, but no lesion lasted more than a few weeks. The patient admitted digging with fingernails and squeezing with fingers to evacuate minute particles which he believed to be the cause of the lesions and to relieve burning, stinging and itching. After each operation the subjective symptoms were temporarily relieved. The patient was unable to point out or describe a beginning lesion (Fig. 8).

CASE 14.—A man, aged 35; intelligent; slightly neurotic. There were a few typical lichen planus papules on the glans penis which did not itch. There was no other clinical evidence of lichen planus on the body. There were numerous

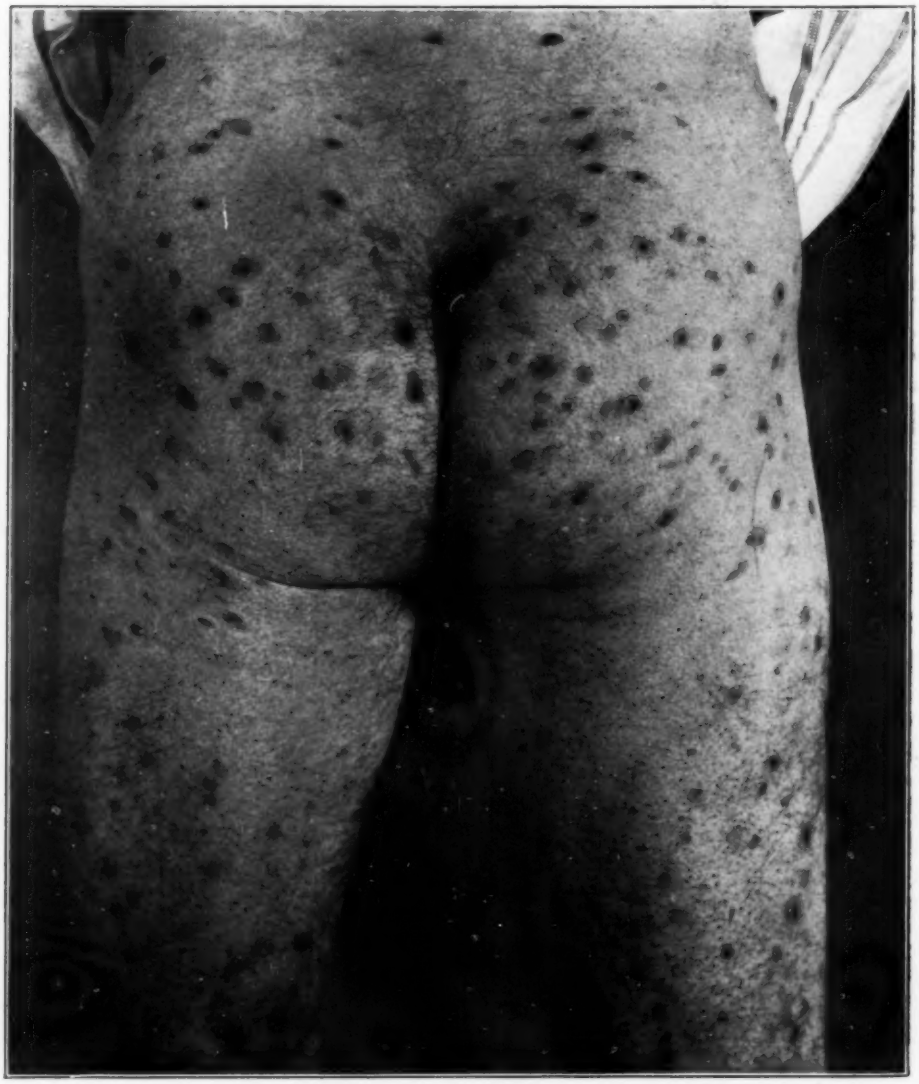

Fig. 9 (Case 14).—Excoriations occurring in lichen planus.

split-pea sized excoriations on the buttocks and thighs, many of which seemed to be excoriated papules or nodules. Clinically, the nodules seemed to be secondary to the scratching and excoriation. The patient insisted that the first sign of trouble was a pinhead size papule associated with intense itching and that scratching caused immediate excoriation. Careful inspection failed to reveal any early lesion that had not been excoriated by scratching. An early lesion was removed for microscopic study. The horny layer, where not excoriated, was thickened and incompletely keratinized — parakeratosis. The granular layer was markedly thickened. There was some acanthosis. Lacunae were present in the papillae, and in the center of the lesion there was a large vesicle occupying the space formerly the site of two or three papillae. There was a fairly marked lymphocytic infiltration which, at the margins of the lesion, occupied the papillary body, being pushed downward in the center by the vesicle. The microscopic picture was that of lichen planus with vesicle formation in the papillary body.

The microscopic findings were unexpected as, clinically, the lesions bore no resemblance to lichen planus, although the lichen planus papules on the glans penis suggested this possibility. The case must be considered as a bullous or pemphigoid lichen planus occurring in a somewhat neurotic subject, the true clinical appearance of the lesions being masked by early traumatism. Lichen planus must always be considered, therefore, when making a diagnosis of generalized neurotic excoriations (Fig. 9).

The question of diagnosis — differential diagnosis — is important. A perusal of the illustrative cases herein reported shows that neurotic excoriations may markedly simulate syphilis, tuberculosis, radiodermatitis, dermatitis herpetiformis, acne varioliformis, and other dermatoses. Care also must be taken to differentiate clearly between neurotic excoriations and malingering, and to exclude excoriations produced in attempts to relieve severe itching by individuals who are not neurotic.

NEUROTIC EXCORIATIONS WITH REPORT OF CASES

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There is considerable literature in dermatology on the subject of self-inflicted lesions of the skin. The cases fall into two groups:

Group 1.—Cases in which self-inflicted lesions are produced surreptitiously.

Group 2.—Cases in which the lesions are self-inflicted through a nervous impulse, but without deception being an essential factor in the practice.

The familiar types of dermatitis factitia constitute the first group of cases, and they need not detain us. The second group is sharply distinguished from the first by the fact that deception is not an essential feature. These patients know the part they play in the production of their lesions, or it can easily be determined from their histories. They readily admit that the lesions are self-inflicted, but they have a neurotic impulse which is quite or almost irresistible to continue in this practice. These cases have apparently had little recognition, and the dermatologic literature concerning them is scant. Adamson[1] in the *British Journal of Dermatology*, calls attention to the subject and summarizes it.

THREE TYPES OF SELF-INFLICTED LESIONS

These cases have been described in the literature under many names. They can all be included under three types:

1. Neurotic excoriations (Wilson); dug-out excoriations (Colcott Fox).
2. Acne urticata (Kaposi); urticaria necrotisans (Waelsch).
3. Excoriated acne of young women (Brocq).

TYPE I

The neurotic excoriations of Wilson and the dug-out excoriations of Colcott Fox have a common origin; that is, the lesions are produced by rubbing the skin with the finger tips or scratching it with the finger nails.

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* Read before the Forty-Second Annual Meeting of the American Dermatological Association, held at Atlantic City, N. J., June 16-18, 1919.

1. Adamson: Acne Urticata and Other Forms of Neurotic Excoriations, Brit. J. Dermat. **27**:1-12, 1915.

The history of the cases usually is that the patients have had their attention drawn to the skin by some disturbance of sensation, usually itching, or by the presence of an actual itching lesion, and the tendency to scratch or rub or otherwise injure the skin at these sites thus produced has developed into an irresistible impulse, so that excoriation after excoriation is produced from day to day. Details of numerous cases of this sort are found in the experience of Wilson, Fox, Adamson and others.

A survey of some fifteen cases of this type which have been reported shows that they occurred in persons whose ages varied from 13 to 49 years. Fourteen cases were female; one male. The duration of the condition varied from five weeks to thirteen months, and in most of the cases the trouble had been present at least six months. In nine cases some definite evidence of an unstable nervous system was present, varying from "easily upset nerves" to definite hysteria, or family history of insanity.

In four cases the author made no mention of the presence or absence of such signs, but in only two cases was it stated definitely that the patient was not of a neurotic or nervous temperament. The face, limbs and chest were the favorite sites, although any part of the body easily reached was involved, and in one case the entire body was covered with lesions. The number of lesions varied from a few to several hundred. The importance of itching in these cases is shown by the fact that in only four were no subjective symptoms complained of.

The common lesion in these cases consists of an oval excoriation, usually slightly elongated and about the width of a finger tip. As a rule, the excoriations are crusted, and many of the cases show pigmented spots or atrophic scars, the result of healed lesions. The English authors have been divided on the question of the etiology, some maintaining that in all cases there was a pruritic dermatosis preceding the excoriation, while others maintained that this was not true in all.

TYPE 2

The acne urticata of Kaposi less surely belongs to this group. Kaposi seems to have understood the character of these cases more clearly than most of his successors, for he calls attention to them as occurring as "wheal-like" lesions, and to the fact that the damage to the skin is produced by self-infliction. But the name that he gave it, "acne urticata," is inept. As Kaposi intimated, the lesions occur as wheals; Waelsch concluded the disease is "A chronic recurrent urticaria with superficial necrosis," and many other observers have called attention to the urticarial character of the lesions. A better name

for the condition would likely be "urticaria necrotisans," as suggested by Waelsch. Numerous observers have reported necrosis in this condition as spontaneous, but Adamson suggests — and we think that Kaposi's description of his case upholds Adamson's view — that the necrosis in these cases is traumatic and a result of self-infliction.

Kaposi describes his case as occurring in repeated exacerbations of "pale red, wheal-like, very hard elevations, varying in size from that of a bean to that of a kreuzer, or larger." . . . "They may last for a few hours, or more usually from two to four days, and then spotaneously involute. Or, as a rule, on account of the extraordinary severe itching or burning, the patient scratches them with the finger nail, or with a needle, or point of a knife and then squeezes them, because no relief is felt, until serum and blood escape from the swollen papillae and rete." These lesions rapidly heal, "but the base and surrounding parts remain very hard and give rise to itching, tension and nervous restlessness, and the patient repeats the scratching and squeezing." This condition is manifestly not primarily a psychosis or a neurosis. It is rather essentially a dermatosis in which itching is so intense that the excoriations of the papules from scratching is a natural result.

TYPE 3

The excoriated acne of young women, of Brocq (l'acné excoriée des jeunes filles), is the condition which we see in a moderate degree very frequently in young women with acne, who develop, through their anxiety over their disfigurement and their effort to cure their lesions, a nervous habit of producing excoriations in the skin by digging at the lesions. There is more or less of a nervous element in these cases, but it does not amount to a neurosis.

The cases that we present do not fall exactly into any of these groups, but are essentially of the same character as the cases of neurotic excoriations of Fox and Wilson.

REPORT OF CASES

Case 1.—The patient, a married man, aged 42, a traveling salesman, is intelligent and alert, but nervous and restless. He presented himself for treatment of a disfiguring, scarring eruption of the face. The lower part of the face was very badly disfigured from deep, irregular or linear scars. On distant inspection the scarring looks as though it might have been produced by an extraordinary severe indurated acne. On close inspection, however, these scars are seen to be linear or stellate or oval, and manifestly represent the sites of previous wounds of the face, many of which had evidently been ragged or linear cuts. The area of the face below the level of the upper lip and extending down to the thyroid cartilage is furrowed by these scars. Underneath the chin are the most extensive scars, and here are several active lesions; the smallest a crusted, superficial ulcer of split-pea size; the largest an ulcer the size of a five cent piece, covered by a thick bloody crust. Most

Fig (Case 1).—Disfiguring scarring eruption.

Fig. 2 (Case 1).—Another view of patient in Case 1 showing extensive scars and several active lesions underneath the chin.

of the lesions are nodules with a lacerated or excoriated tip, such as one sees after an awkward effort to open a deep acne abscess. On removal of the crust from the large ulcer, the skin at one edge of the ulcer was found undermined to the extent that a probe could be introduced into the subcutaneous tissue, under the margin of the ulcer, for three quarters of an inch. In another place the patient had dug into several adjacent lesions until they were joined into a network of linear excoriations, covering an area about two inches in length.

The patient frankly admitted that these wounds were the result of his own digging at his skin. The small nodules found at the site of previous incisions would become uncomfortable, and he would get relief by cutting them open and digging out the material beneath. Usually he opened them with a razor or knife, and then, with a small knife blade or pair of tweezers, he worked into them, digging out hairs, fat or other normal constituents of the skin. His particular *bête noire* was buried hairs. The discomfort came on at night, and

Fig. 3 (Case 1).—Improved condition of patient in Case 1 after treatment.

he thought he had almost ruined his eyes by standing under a bright electric light before a mirror and digging at his face. He had sought advice many times. He stated that he expected physicians to laugh at him when he told his story, but he thought he had a rare undescribed malady. One motive that led him to dig into the lesions was the relief that he got from cutting into them, but on close questioning he said the greatest discomfort in the lesion was in a few minutes after opening. Another motive was his belief that there was diseased tissue in them, the removal of which was necessary in order to get relief and before a cure could take place.

His wife, who came in independently of him, confirmed his entire story. He would stand in the middle of the night before the mirror as much as five hours at a time digging at his face. He had lost so much sleep in this way that he had become unable to hold his position. According to his wife's statement, he had one paternal and one maternal aunt who were in asylums for the insane.

The suggestion to excoriate the skin probably began in his case through the occurrence of some itching or otherwise uncomfortable lesions about the skin, probably inflammatory papules, as a result of close shaving. At the time that we saw the patient, his skin showed numerous inflammatory nodules, at the site of previous traumatisms, which might furnish sufficient discomfort to recall the suggestion continually.

Case 2.—A patient of F. G. Harris, by whom he was referred to us for this examination, and through whose courtesy we publish this case report, was a man aged 46, who looked much older—a millwright by occupation. As a young man he had "pimples" about the face and back, and for six or seven years after he was 25, he had many boils. When he was about 40 he began to notice that he could feel hard lumps of varying size deep in the skin. According to his description, these never came to a head, but became covered with a scab which would be loosened by a watery discharge. Then he began to dig at these lumps and the habit had grown on him for six years. He digs into them with his finger nails; occasionally with a pair of scissors. Sometimes, according to his statement, he digs down one half inch or more. He obtains "little white eggs," and there is at the bottom of the excoriations a "greenish scum" which is very painful when touched. He is positive that he feels small lumps in the skin at the points of severe itching, and that the only way he can get relief is to dig until he has succeeded in extracting the substance that forms the nodes. He readily points out an itching spot where he can feel one of the lumps but nothing can be found by us at the site.

The face shows numerous jagged, irregular linear scars, mostly on the cheeks and chin but some on the forehead and scalp. On the left cheek there is a kidney-bean sized excoriation covered by a dirty yellow crust; on the left side of the forehead a similar lesion twice as large. There are numerous small excoriations. There are similar scars and a few excoriations on the neck and arms and sparsely on the trunk. Similar lesions are also found on the legs, especially about the ankles. In addition, there is some spontaneous folliculitis on the arms and the legs, such as one would expect to find associated with infected lesions of these parts. It is rather a notable fact that in this case nearly all of the active lesions are on the left side of the body. The patient complains of fugitive pains, is depressed and restless, and has an impassive, expressionless face. It is evident that our attempts to explain his trouble to him make no impression on him. Altogether he presents more distinct evidences of psychosis than the other two patients.

Case 3.—A widow, aged 58, nervous and unstable. On the arms and legs, across the shoulders and over the sacral region, is a profuse eruption of hard inflammatory papules and nodules up to the size of a hazelnut kernel. Many of them are excoriated; some of them are covered with a pus crust, and among them are numerous linear excoriations. She claims that the nodules did not itch, but that they sting and bite. The eruption began last September when, according to her report, she got up one morning and found it substantially of its present extent. She readily agrees that the breaks in the skin are due to her scratching, but explains that this is necessary because she had parasites in the skin which she scratched out in order to get relief. She thinks that the material she gets out of the skin with her fingers are parasites, and that the nodules would not get well until she got this out. Her family history is negative as regards nervous diseases, but her son immediately accepts the view that her trouble is largely imaginary as in keeping with her mental make-up.

COMMENT

Case 3 is practically identical with cases described by Wilson and Colcott Fox. Cases 1 and 2 are of similar character but differ in that: (1) There is a greater degree of destruction of the skin produced; (2) there is more definite mental disturbance, and (3) the patients have an obsession that there are foreign substances in the skin which they must get out in order to obtain relief. These cases are in fact, we think, essentially of the same character as cases of acarophobia, but differ in degree. Both acarophobia and these cases occur in patients of unstable mentality who are, as a rule, actually insane on the subject. The patients with acarophobia go on scratching themselves indefinitely, but produce no destruction of the skin, or at least, very little. These patients, under a similar delusion, also scratch and dig the skin, but their actions are so violent that severe destruction of the skin occurs. In the case of acarophobia, the delusions are, as a rule, ineradicable and a cure is therefore impossible. In Cases 1 and 3 of our group, the patients have responded to a considerable degree to our appeals to reason, and have shown a corresponding improvement. In Case 3, we think there is a reasonable hope that the patient will be able to overcome her impulse and will get well. In fact, she is almost well now. The patient in Case 1 has shown very great improvement. For a while he was able entirely to resist digging at himself, and within ten days his face was entirely healed, but later he has not been able to avoid an occasional digging into a spot, and we think it likely that he will relapse completely. In Case 2 we were unable to make any impression on the patient. Like acarophobia, Cases 1 and 2 will probably continue indefinitely.

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DISCUSSION

DR. CORLETT was much interested in Dr. Pusey's very admirable paper and believed there were three types of the disease described by him. He had many years ago reported a case of so-called idiopathic gangrene of the skin in a young woman who later presented lesions which were undoubtedly self-inflicted, yet he believed there was such a type as idiopathic gangrene of the skin. The second type described by Dr. Pusey in his experience occurred in elderly people of unstable mentality. He had under treatment an elderly woman who was in a fair way to become a candidate for an insane asylum, who found in her skin many strange things no one else could find. Nor was she susceptible to conviction that the creeping and boring things of her imagination were only worn particles of her clothing or other detritus.

The third was the type of the neurotic individual, most frequently seen in young women, with self-inflicted wounds. Such a case was shown at the Chicago Dermatological Society some years ago. At that meeting opinions were about evenly divided, some believing that the lesions were self-inflicted, while others regarded the case as a typical example of idiopathic gangrene. The subsequent history, however, showed that the lesions were self-inflicted.

Dr. Hartzell was especially interested in the excoriations which occurred in the so-called acne urticata, which he thought was a bad name. These lesions occurred in young girls and consisted of round or linear excoriations. He had repeatedly requested the patients not to touch them, so that he might see the primary lesion but had rarely been able to see it. He had called this eruption acne urticata but believed it was neither acne nor urticata. He had under his care a young woman who scratched up her face in a most distressing fashion. He told her if she did not stop she would have to seek another adviser, and she took him at his word.

There was a second group of cases occurring in those who had the delusion that there was a foreign body in the skin, a grain of sand or a mite, which led to scratching. These cases occurred particularly in drug addicts, especially those who were addicted to cocain. He had seen several cases of that kind.

Dr. Goldenberg understood Dr. Pusey to say that acne urticata was a skin neurosis, but thought anybody who had ever seen a case would bear him out that it was a distinct urticaria necrotisans. He had seen several typical cases abroad and in New York and did not believe this type belonged at all to the neuroses of the skin. He believed it was a distinct dermatosis, characterized by papular urticarial lesions, an intolerable pruritus and an utter failure of all therapeutic measures.

Dr. MacKee said that Dr. Pusey had presented an interesting and important subject. The principal points were the diagnosis and recognition of a traumatic etiology. The diagnosis was often difficult because the affection at times markedly simulated syphilis, tuberculosis, epithelioma and other diseases. Not infrequently the determination of traumatism was difficult because the patients often denied the habit of picking and digging at the lesions. While the eruption was usually located on the face, scalp and neck, the speaker had encountered three examples where the affection was quite generalized.

Dr. Little complimented Dr. Pusey on his classification of these cases and considered the first group as the most characteristic. The type described by Colcott Fox under the title of "dug out excoriations" were very characteristic and he thought the other cases showed that some actual lesions of the skin existed in a nervous patient. He recalled three proved cases, one a man aged 40 who about ten years previously had begun to dig himself in that way. He was covered with scars and used a particular instrument to remove little portions of his skin which he regarded as being animal infections. The interesting point was that the patient was a confirmed epileptic, and that his son at the age of 12 began to do the same thing. It was apparently a purely nervous tendency. Another patient had for the last five years been digging out little pieces of skin in the same way and was covered from head to foot with all sorts of dermatoses. The characteristic thing about this case was that the patient indulged in the most ferocious scratching he had ever seen, engaging nurses to do it for him. He had produced a very great thickening of the skin but remained in admirable health and his physical condition was excellent. The third case was that of the wife of a colleague of his. It was not a very happy match, and they had lost a son in the war. The unfortunate lady had

the habit of getting up in the early hours of the morning and spending an hour or two digging her face, so that her face was very badly scarred. In one instance the ulcer seemed to be spontaneous. He had seen in several instances an ulcer as large as a small pea penetrating the muscle and the surgeon said that the only thing to do was to remove it, so the whole thing was extirpated. He could not think that it was self-inflicted because it was too deep. Bacterial examination showed nothing but staphylococcus organisms.

The speaker considered that group extremely characteristic and thought it was the only one of the three which was deserving of a separate clinical class, but he thought it did deserve that title.

Dr. Fordyce referred to an extraordinary case of mutilation of the face and neck produced by a sharp instrument and the finger nails. The patient had a delusion that the skin was infested with mites and in endeavoring to remove them he destroyed the skin and underlying tissues exposing the bone of the lower jaw. A plastic operation was necessary to cover the exposed parts.

Dr. Pusey stated that he and Dr. Senear were led to report these cases because of Adamson's article on the subject, and because they thought that attention should be called to them in American literature. That the report was timely was indicated by the fact that Dr. MacKee the previous week had read an article on exactly the same group of cases. Practically every one digs more or less at little irregularities or lesions in the skin. Occasionally patients are seen who have a distinct habit of digging some particular lesion. One sees all degrees of this tendency to injure the skin from these slight nervous manifestations to patients such as the ones described who produce serious destruction. The condition was not primarily a dermatosis; the results merely were in the skin. In the milder degrees it constituted merely a nervous habit, but in the severest cases the condition was a distinct psychosis. It seemed to the authors that either Fox's name of dug-out excoriations or Wilson's name of neurotic excoriations was a good title. The name dug-out excoriations was more or less tautologic, because all excoriations were dug-out, and for that reason they were inclined to Wilson's name.

VENEROID ULCER

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Welander[1] in 1903 reported, as a definite clinical entity, a disease occurring in the form of ulcers about the vulvae and genital region of girls and women who had not been exposed to veneral disease. Over half of his twenty cases occurred in young girls or young women with intact hymen.

Welander's twenty cases were seen by him during a period of seven years, indicating that the disease is not extremely uncommon. Some years later, other authors, such as Lipschutz,[2] Tschapin[2] and Lenartowicz,[3] reported similar cases, including, however, some reports of nonvenereal ulcer that did not correspond to the disease described by Welander. These authors evidently overlooked the fact that veneroid ulcer or the ulcer of Welander is a clear-cut, definite disease, and does not include all the nonvenereal ulcers that may occur about the female genitalia. Fønss[4] has recently reported three additional cases.

The striking resemblance of veneroid ulcer to the primary lesion of syphilis and chancroid has usually led the physician to make a diagnosis of venereal sore in spite of the history of no exposure. The possibility of unpleasant or even tragic consequences to the patient because of these erroneous diagnoses can easily be appreciated.

REPORT OF A CASE

Miss F., aged 21, noticed a small sore or ulcer on the inner surface of the right labium minus, Oct. 1, 1919, which caused some pain on walking. The sore or ulcer secreted a gray, rather sticky discharge. In a few days two more ulcers appeared on the labia majora. Constitutional symptoms, such as fever, malaise, etc., were absent. The ulcers were superficial, sharply circumscribed, depressed in the center and covered with a sticky gray discharge. There was no areola and no surrounding inflammatory reaction. The ulcers were about the size of a dime, those on the labia majora being almost perfectly round, while that on the inner labium near the hymen was somewhat oval. There was no induration and the inguinal glands were not enlarged.

The patient denied exposure to venereal disease, and the hymen was apparently intact. Repeated examinations for *Spirochaeta pallida* by dark field and

1. Welander: Arch. f. Dermat. u. Syph. **68**:403, 1903.
2. Lipschutz: Arch. f. Dermat. u. Syph. **114**:363, 1912.
3. Lenartowicz: Abst. München. med. Wchnschr. **64**:358, 1917.
4. Fønss: Ugeskr. f. Laeger **81**:1141 (Sept. 4) 1919; Abstr. J. A. M. A. **73**:1320 (Oct. 25) 1919.

staining methods gave negative results. Ducrey's bacillus of chancroid was not found, although a number of slides were made at intervals of a few days. The spirochete or spirillum and fusiform bacillus of erosive vulvitis were absent. Examination for the diphtheria bacillus likewise proved negative.

The technic in scraping the ulcers and applying alcohol in order to obtain serum for the examination for *Spirochaeta pallida* proved markedly beneficial, and the ulcers healed under indifferent treatment in about a month, leaving round, slightly depressed scars with raised edges.

CHARACTERISTICS OF THE DISEASE

Symptoms. — Constitutional disturbances, such as fever, malaise, etc., are absent. The first symptom noted by the patient is the presence about the vulva of one or more sores or ulcers with a slight sticky discharge. These ulcers cause some pain or sensation of soreness when walking; and, if located near the urethra, some pain on urination.

The ulcer is round or oval and is usually about the size of a dime. It is rather superficial and covered with a grayish or slightly yellowish mucopurulent discharge. The edges are raised, sharply defined and are not undermined. There is no areola and there are no signs of inflammation in the adjacent tissues. On palpation there is no sign of induration. The lesions are rather painful when touched or scraped with a dull instrument and bleed readily. There is no outpouring of serum as in the primary lesion of syphilis. In a general way the ulcers resemble chancroid, chancres and moist papules of syphilis. The ulcers are acute in character, coming on suddenly, and healing under indifferent treatment in about a month.

The inguinal glands, although as a rule not enlarged, are occasionally slightly enlarged.

The scars, which soon after healing are quite characteristic, are superficial, round or oval with raised edges. In time undoubtedly these scars become almost, if not entirely, unnoticeable.

Bacteriology—Microscopic examination is of great importance, as it is necessary to exclude, by repeated examinations, *Spirochaeta pallida*, the bacillus of Ducrey, Vincent's spirochete and fusiform bacillus, and the diphtheria bacillus.

As the mucopus from the ulcer is usually mixed with vaginal or vulvar secretion, smears show a large variety of bacilli and cocci, rendering the recognition of the offending mico-organism a matter of difficulty.

Lipschutz[2] found, in patients with these ulcers, a gram-positive bacillus resembling the bacillus subtilis, which he claims is the etiologic micro-organism. These bacilli were easily demonstrated in the smears from my patient; but, in my experience, identical bacilli are frequently

found in girls or women with vaginal discharges due to gonorrhea or other causes. In my patient the number of these bacilli in the vaginal or vulvar discharge was very much greater than the number in smears taken directly from the ulcers. Lipschutz found these bacilli in sections cut from the ulcers, but only near the surface, where they could undoubtedly be present as saprophytes. Bacteria that produce ulcer are usually found in the depths or active advancing parts of the ulcer, and are frequently absent on the surface.

The presence of these gram-positive bacilli in vaginal discharges due to various causes is noted by Lipschutz, and he advances the theory of mutation — that they are ordinarily nonvirulent, but may become virulent under certain circumstances. On the whole, it appears probable that the bacilli described by Lipschutz are saprophytes. In all probability the micro-organism of veneroid ulcer remains to be discovered.

Infectivity. — In contradistinction to the findings in chancroid, Welander in many experiments obtained negative results when the pus from these ulcers was inoculated on the arm of the patients. In other words, the disease is not auto-inoculable. No cases have been reported in which the husband has become infected. The infectivity of the disease, therefore, appears to be slight.

Micro-organisms that cause ulcer are rarely, or perhaps never, limited to any one region or organ of the body, so that it is probable that these ulcers will be found in other regions besides the female genitalia. Welander reports their occurrence about the anus in women, and mentions a possible case of this disease in an elderly man.

DIAGNOSIS AND TREATMENT

While there are a number of distinct dissimilarities, the general appearance of veneroid ulcer is strikingly similar to that of chancroid and the chancre. In the diagnosis of veneroid ulcer, the history of nonexposure to venereal disease is of great importance. This history is often corroborated by such evidence as the age of the girl, her general appearance, etc., and proof of nonexposure is not infrequently found in the presence of an intact hymen. With a history of nonexposure to venereal disease, an acute onset, absence of constitutional symptoms, and the characteristic depressed, superficial, round or oval ulcer with no induration, a probable clinical diagnosis of veneroid ulcer can be made. The probable or tentative diagnosis is made certain by the exclusion, on repeated examination, of *Spirochaeta pallida*, the chancroid bacillus, the diphtheria bacillus and the spirochete and fusiform bacillus of erosive vulvitis.

It is hardly necessary to dwell on the social and legal complications that may arise from the erroneous diagnosis of syphilis or chancroid in girls or women with veneroid ulcer. It is rarely necessary to make a definite diagnosis of early venereal disease in the absence of the specific micro-organism. Certainly, with a history of nonexposure to venereal disease, the diagnosis of the primary lesion of syphilis should never be made unless *Spirochaeta pallida* is found in the serum from the suspected sore, or until the Wassermann reaction becomes positive.

The ulcers heal under indifferent or mild antiseptic treatment in about a month. In all probability healing would occur in a shorter time under vigorous treatment. It is essential for diagnosis that repeated microscopic examinations for the spirochete of syphilis and other bacteria be made, and these examinations necessitate a more or less expectant treatment. Hot applications and thorough cleanliness are of value in limiting the spread of the disease. Talcum or some similar drying powder should be freely used about the genital region. Thymol iodid is of value as a dusting powder on the ulcers. The scraping of the ulcer and the use of alcohol locally in the examination for the spirochete of syphilis results in improvement.

SUMMARY

1. Veneroid ulcer or the ulcer of Welander is a disease characterized by the appearance of ulcers about the vulvae of girls or women who have not been exposed to venereal disease.

2. In all probability the disease is not extremely uncommon.

3. While there are a number of marked distinct clinical differences, the general appearance of veneroid ulcer is strikingly similar to that of chancroid and chancre.

4. The disease is self limited, healing under indifferent treatment in about a month.

5. The scars left after healing are typical. They are superficial, round or oval, with slightly raised edges.

REPORT OF TWO CASES OF IDIOPATHIC HEMORRHAGIC SARCOMA (KAPOSI), THE FIRST COMPLICATED WITH LYMPHATIC LEUKEMIA *

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The subject of idiopathic hemorrhagic sarcoma of Kaposi has already been written about from many standpoints, and to date quite a large number of cases have been reported. They have been reviewed so thoroughly in the articles of Gilchrist and Ketron,[1] and in that of Hazen,[2] that we feel that it would be superfluous to mention these reviews except in connection with the cases relevant to conditions in the patients we wish to report.

CASE REPORTS

CASE 1.—*History.*—William K., a Russian Hebrew, aged 63, was seen by one of the writers in 1913, in consultation with Dr. G. W. Crile, on whose service the patient was at that time and to whom we are indebted for these notes. His principal complaint was that he had some red spots on the bottom of his left foot (Fig. 1), which at first had caused him very little trouble; later they had increased in size and were very painful when he walked. A year or so later he told us that some reddish spots had begun to develop on the surface of his left leg, and also on his right leg (Fig. 2). About one year before the patient had entered the hospital, he told us, there had also developed some reddish spots on the arm, and a few on his face; otherwise he said his health was very good, and he had no other discomfort.

The patient's family history was negative. Four years ago he was operated for mastoid disease, which delayed healing for nine months. The patient denied infection with syphilis. He had been married forty-five years; there were six children, living and well. He drank very little and smoked in moderation.

Examination.—Physical examination of the internal organs proved to be entirely negative. The spleen and kidneys were not palpable, the liver was just palpable at the costal margin. The reflexes were present. There seemed to be general lymphatic enlargement, the glands in the axillae being large and freely movable; the ones in the groin were small.

The skin showed the following changes: Over the entire body were scattered numerous irregularly shaped areas of brownish-red pigmentation, these being especially marked on the lower limbs (Fig. 3). There was quite a little scar formation on the lower limbs. These brownish-red and bluish-red areas were usually more markedly pigmented at their periphery, and seemed lighter in the centers. The limbs showed plenty of evidence of old and new hemorrhages into the tissues, while the bluish-red areas were markedly infil-

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* Read before the Forty-Second Annual Meeting of the American Dermatological Association, held at Atlantic City, N. J., June 16-18, 1919.

1. Gilchrist, T. A., and Ketron, Lloyd W.: Jour. Cutan Dis. **34**:429, 1916.
2. Hazen, H. A.: J. Cutan. Dis. **10**:521, 1911.

Fig. 1 (Case 1).—Wart-like lesions on bottom of foot.

Fig. 2 (Case 1).—Later stage of condition shown in Figure 1.

trated down to the subcutaneous tissues. Both the lower limbs were edematous and pitted quite readily, while along the outer border of the left leg and on the bottom of the left foot, the skin was thickly studded with horny, very vascular nodes, bluish in color; they were quite painful to the touch. Scattered especially over the upper limbs were quarter to dollar size nodules, with deep bluish, infiltrated, raised areas (Fig. 3), while the ears (Fig. 4) showed numerous bluish, raised lesions, the size of a small finger nail. All the lesions on the upper extremities and on the ears were very vascular, and it was possible to squeeze out most of the blood by simple pressure with the fingers.

At this time the white blood count was 23,600 and the red blood count 4,780,000. A clinical diagnosis was made of hemorrhagic sarcoma of Kaposi, and was later substantiated by microscopic study of the tissues. Unfortunately a differential count of the blood was not made, and the patient was lost sight of by the writer, as he was not on his service.

Course and Treatment.—In June, 1916, the patient consulted one of us at his office, and showed much the same condition, except a marked exaggeration of the disease; he was then sent into the hospital for further observation and study. The papillomatous overgrowths on the lower limbs and on the bottom of the left foot had much increased in size, so that it was almost impossible for the patient to walk. He was also somewhat weaker, and unable to work. At this time a careful examination was made of the blood, and we were surprised to find the following condition:

Hemoglobin (Talqvist), 70 per cent.; white blood cells, 66,000 per cubic millimeter; red blood cells, 4,000,000 per cubic millimeter.

Differential count: Small mononuclears, 90 per cent.; large mononuclears, 2 per cent.; transitionals, 1 per cent.; polymorphonuclears, 7 per cent.; eosinophils, 2 per cent. Two hundred cells counted.

The red cells showed irregularity in size, and no nucleated red corpuscles were seen. Blood cultures were made at this time, but showed nothing of interest. The patient was put on injections of sodium cacodylate, 2 grains daily, for three weeks. Later the white blood count dropped to 40,000. He also had several roentgen-ray treatments on different areas of his body. He seemed to improve somewhat generally, but refused to stay longer in the hospital. Some specimens of tissue were removed from different areas for future study.

The patient thereafter called at the office of one of the writers, from time to time, and on May 2, 1917, once more entered the hospital. His condition at this time was much worse, the lesions had all increased in size, and the patient was quite feeble. He complained of gastric distress, and of inablity to walk. The skin of the legs felt hard and leathery, though there were occasional small patches of clear skin between lesions. Both feet had a "cauliflower," fungating, vascular growth on the plantar regions. There was no lymphatic enlargement. The spleen was not palpable with certainty, as the patient was very

Fig. 3 (Case 1).—Side view of foot.

Fig. 4 (Case 1).—Vascular lesions of ear.

rigid; the liver just palpable. At this time there was general enlargement of the glands, which were discrete and firm. His blood findings were as follows:

Hemoglobin (Talqvist), 70 per cent.; white blood cells, 68,000; red blood cells, 3,600,000.

Differential: Small mononuclears, 89.6 per cent.; large mononuclears, 1.1 per cent.; polymorphonuclears, 7.2 per cent.; transitionals, 0.8 per cent.; mast cells, 1.2 per cent.

The red blood cells showed nothing remarkable. The patient was treated with roentgen rays on the plantar surfaces of the feet and on his hands and ears. The feet improved quite remarkably. However, as his general condition did not seem to improve, he refused further treatment and was discharged June 19, 1917, his white blood

Fig. 5 (Case 1).—Hard indurated vascular lesion at base of thumb.

count rising to over 200,000 before leaving the hospital. A few days later one of the writers was summoned, but before he could get to him the patient died. Necropsy was refused because of religious convictions. Specimens of tissue were removed from the patient on this visit, from a large circular, vascular area on the back of the left hand.

HISTOPATHOLOGY

A very striking characteristic of all the tissues, on examination, was the very marked vascularity. Throughout all of the involved tissue, there was a great increase in newly formed blood vessels. Here and there throughout the entire tissue there was a line of endothelial cells indicating newly formed vessels. There was a marked increase in blood pigment throughout the tissues, especially around these vessels. The neoplastic growth was especially pronounced

around the coil glands. This lesion appeared as a very early one, and the lesions were characterized by cellular infiltration of lymphocytes and occasional plasma cells. The neoplasm itself was made up of spindle cells that appeared to arise from the vessels, which placed it in the sarcoma group. The tissues were quite edematous and swollen. The epidermis was not especially thickened. In several areas there was noted an infiltration of cells which were practically homogeneous in character, and apparently of the small round cell type, though not of the type seen in leukemia.

Fig. 6.—An early stage of sarcoma showing new-formed vessels lined with endothelial cells, edema of the tissues and pigment formation.

Case 2.—*History.*—Gust R., aged 56, was seen through the courtesy of Dr. D. G. Tanno, by one of the writers. He complained of a tumor on the hand, causing inability to work. He said that some twenty years before, he at first had a swelling of the second finger of the left hand, which was bluish in color. This bluish discoloration and swelling had gradually spread to the third and little fingers, and about seven years ago it had spread back to the dorsum of the hand, up the wrist, and some lesions had begun on his lower limbs. Of late the swelling of his hand had become quite painful, the skin of the second finger was breaking down, and discharged more or less

serum; it was almost stiff, so that the patient was unable to work. He gave no history of having had this hand injured or frozen. The family history and physical examination were negative. With the exception of the condition above mentioned, the patient had always been well, and denied any venereal infection. General physical examination revealed nothing extraordinary. The glands showed no especial enlargement, except the left axillary glands, which were somewhat enlarged and discrete. Neither the liver nor spleen were palpable. Examination of the patient's blood showed nothing abnormal, and is therefore not reported in detail. The Wassermann test of the blood was negative.

Physical Examination.—There was symmetrical involvement of both lower limbs, though the lesions were not of the same character entirely on each limb. The left one was, if anything, more involved, and in each case the eruption

Fig. 7.—New-formed vessels, clumps of pigment and cellular infiltration of the tissues.

was below the knees. The lesions consisted of irregular, deep reddish-blue areas varying in size from the head of a nail to irregular areas, some of them many centimeters in diameter. On the left limb there were numerous small, light bluish spots. Over the tibia there was a long lesion about 5 by 2 cm., deep blue, fairly well defined and markedly indurated; on the lower portion of this limb, extending from a spot 6 cm. above the outer malleolus, to a spot 3 cm. below the same landmark, anterior to the base of the third toe, and posteriorly around to the inner malleolus, the skin was raised, verrucose, and of deep bluish tint, also markedly indurated; a like area was

found on the outer border of the right foot, though this was not so marked in extent, pigmentation or verrucosity. On the right limb, however, was a very extensive, indurated deep bluish lesion, extending posteriorly from the heel half way to the calf. Its outlines were irregular, but with very distinct borders. On the inner surface of the right knee, there was an area about the size of a nickel, containing several bluish striae. These lesions as yet showed no induration. There was one small bluish area on the left buttock. The most notable change was seen on the left hand and wrist. The entire skin from the wrist down was markedly swollen, so that the three middle fingers were about twice their normal size, and on the posterior surface of the hand was a large, deeply pigmented area extending from the wrist distally to the second joint of the second and third fingers, to the nail of the

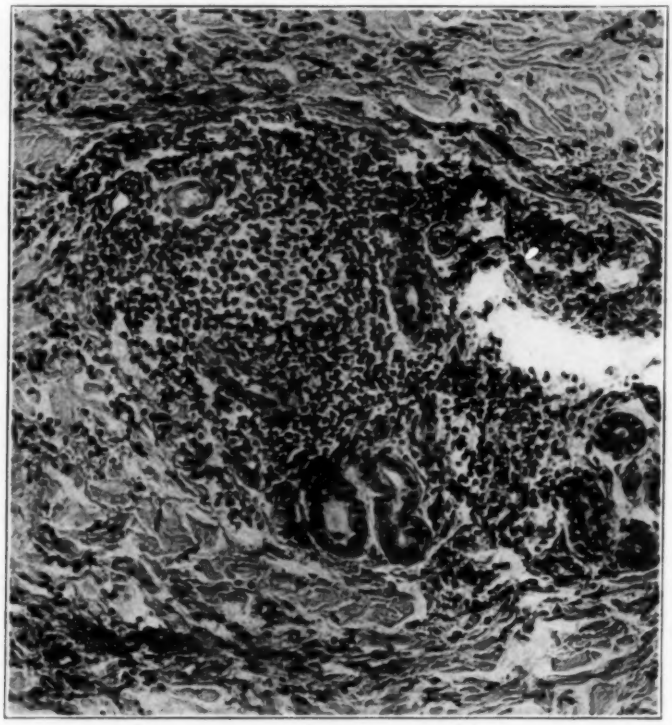

Fig. 8.—An infiltration with homogeneous small round cells around the coil glands.

middle finger, and on each side to the palmar border, while the palmar borders of the middle and second fingers were deeply pigmented. This area was much swollen, edematous and indurated, while the skin on the three fingers was broken and showed some exudation. There were some pustules on the surface of the large lesions from secondary infection. Just above the wrist was another area of deep pigmentation about 6 cm. in length and 3 cm. in width at its widest portion. The borders of this lesion were irregular, and over the surface of the same, as over the surface of the back of the hand, were scattered numerous nodules varying in size from a split pea to that of a castor bean.

Course and Treatment.—The patient was put on local applications of 1 per cent. of aluminum acetate solution for the hands, and given daily injections of sodium cacodylate, 2 grains; the fingers, back of the hand and lower limbs were also treated with roentgen rays. There seemed to be marked improvement, and the patient was discharged from the hospital, March 8, 1919, with quite good use of his left hand; the lesions on the lower limbs were very much improved. A large area of the bluish infiltrated mass on one calf was removed under aseptic precautions, for future study. Likewise a small beginning lesion over the right knee, and a small lesion on the back of the left hand.

HISTOPATHCLOGY

All these tissues presented a picture quite similar to that seen in Case 1. There was a marked formation of new blood vessels with accumulation of pigment, especially around the coil glands. There was

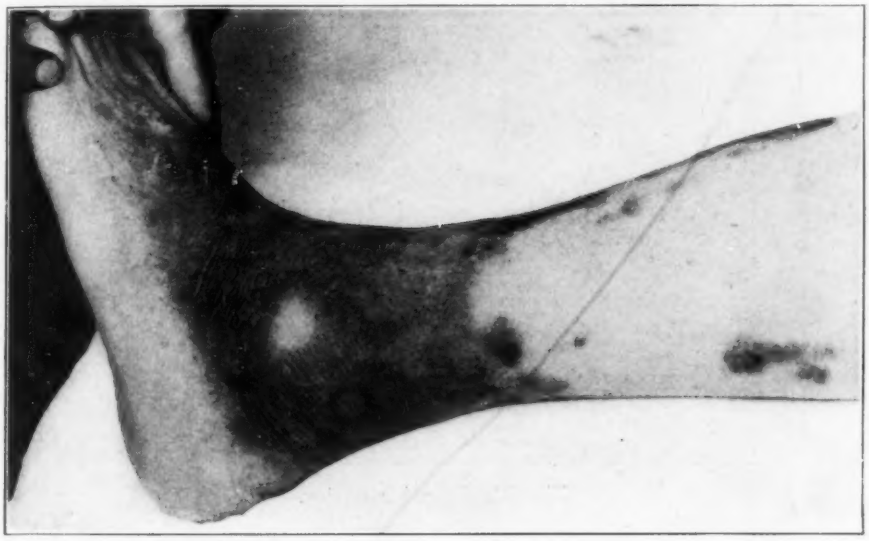

Fig. 9 (Case 2).—Eruption on feet.

similarly an infiltration of round cells, some plasma cells and later, spindle cells. In this patient likewise were noted, though not so frequently, isolated areas made up of a homogeneous mass of small, round cells. Pigment granules were found in the tissue spaces apparently having no relation to blood vessels, and not confined to phagocytes.

ETIOLOGY

There has been much discussion in the past as to the etiology of hemorrhagic sarcoma of Kaposi. Clinically, the disease looks much like a granuloma, infectious in origin. It usually begins on one of the

extremities and spreads slowly, and gradually involves other portions of the body. Ewing[3] feels that it is a granuloma, which in certain predisposed subjects begins taking on a neoplastic property. The new growths in the viscera he thinks are probably not metastases, but arise from multiple foci which were originally inflammatory. The final tumor product is a spindle cell sarcoma. We are all familiar with the fact that it is seen more in Italians and Russian Jews. Lieberthal has already mentioned freezing as one of its predisposing causes, the disease always beginning on one of the extremities. We agree with him that trauma may predispose to its origin. If it is actually an infectious granuloma, the histologic picture is a terminal event, and puts it in the angiosarcoma group.

We are disposed to report our cases inasmuch as one of them is the first on record, at any rate to our knowledge, in which a lymphatic leukemia developed. Whether there was any connection between the

Fig. 10.—Eruption on leg.

lymphatic leukemia and the hemorrhagic sarcoma of Kaposi, we are unable to state. Unfortunately we could not obtain a necropsy. Certainly as the patient's clinical lesions became worse, his leukemia increased in severity and before his death he had a white blood count of over 200,000, yet the cutaneous lesions showed nothing especially characteristic of a leukemia, but were always distinctive of hemorrhagic sarcoma of Kaposi.

We are all familiar with the case of Pardee and Zeit,[4] in which the patient with a typical mycosis fungoides, was found also to be affected with leukemia. Wende[5] has also reported a case of probable

3. Ewing, James: Neoplastic Diseases, Philadelphia, W. B. Saunders Co., 1919.
4. Pardee, L. C., and Zeit, F. R.: J. Cutan. Dis. **29**:7, 1911.
5. Wende, G. W.: J. Cutan. Dis. **16**:205, 1898.

Hodgkin's disease transformed into a leukemia before death. There are many cases on record[6] of Hodgkin's disease being complicated with leukemia, and vice versa. One of us[6] has recently reported transformation of a lymphosarcoma before death into a leukosarcoma, with a white blood count of 152,000. This has already been discussed by one of us[6] in connection with lymphogranulomatosis. As we have said before, we are unable to say whether there is any connection between the lymphatic leukemia and the hemorrhagic sarcoma in the first of our cases. It is certainly an unusual occurrence, and we record it in the hopes that perhaps later some one may find it of use in correlation of diseases. It was unfortunate in our case that because of the patient's religious point of view, a more careful study of conditions was not possible.

Justus[7] has recently reported having injected in the back of a white mouse, some emulsion of a rapidly growing area from a case of hemorrhagic sarcoma of Kaposi. Later on, in the lungs, heart and liver, he observed collections of new formed cells, especially around the arteries. He succeeded through emulsifying the kidneys of the injected animal, in transmitting this disease down through five generations, and areas injected always showed the lesions characteristic of sarcoma of Kaposi. We regret to say that in our experiments this has not been possible, as we have injected white rats, guinea-pigs, young cats and rabbits with pieces of tissue emulsions intraperitoneally, subcutaneously and intratesticularly, from Case 2, yet we have no result, so we are able to add nothing to the mooted question of etiology in this disease.

TECHNIC

Our technic was as follows: Tissue was excised under aseptic precautions, and placed immediately in saline with ice around it. It was then emulsified by grinding with sand, and injected, as before mentioned, into the animals. We also made transplants of tissue pieces subcutaneously, intraperitoneally and intratesticularly. After two months the animals showed nothing. We then killed them and careful postmortem examination showed no evidence of disease. Emulsions were made of the organs and injected into another generation of white rats. They remained alive and are still well at the end of one month.

PIGMENTATION

The blood pigment does not appear in phagocytes, but is free in the spaces, and especially around the vessels and coil glands. It appears very early — being seen before there is much inflammatory change and

6. Cole, H. N.: J. A. M. A. **69**:341, 1917.
7. Justus: Arch. f. Dermat. u. Syph. **99**:446, 1912.

typical proliferation of the cells, characteristic of this disease. We proved this pigment to be hemosiderin by the iron reaction of Nishimura,[8] a modification of Perl's method. It gives excellent results, the iron is well differentiated against the tissues. It may be used with a secondary stain of eosin-hematoxylin without interfering with the pigment stain.

RÉSUMÉ

We report two cases of idiopathic hemorrhagic sarcoma of Kaposi in a Russian Hebrew, aged 66, and in an Italian, aged 56. In the first case the disease being of five or six years' duration; in the other case, of twenty years' duration. In Case 1, the patient developed a lymphatic leukemia in the course of his disease, but throughout the course his cutaneous lesions showed the histologic characteristics of hemorrhagic sarcoma of Kaposi; i. e., the formation of new blood vessels in the corium, perivascular infiltration with small, round cells, plasma cells and spindle cells, and with a marked infiltration of the tissue with blood pigment, consisting of hemosiderin. Experimentally, we were unable to transmit the disease to cats, white rats, to guinea-pigs and to rabbits.

We wish to thank Dr. H. T. Karsner for suggestions and for reviewing our work.

DISCUSSION

DR. LANE asked about the appearance of the lesions on the feet. In the illustrations some of them very much resembled granuloma pyogenicum. This was interesting in view of the fact that occasionally lesions which at first sight appeared to be those of granuloma pyogenicum proved to be sarcoma.

DR. WISE said it was so long since he had had an opportunity to read up on Kaposi's sarcoma that he wished to know how Dr. Cole distinguished his cases from ordinary nodular multiple sarcoma of the skin. Kaposi's disease occurred almost exclusively in immigrants; he had never seen it in an American-born citizen, which might be an unimportant observation. How did Dr. Cole distinguish the cases of which he presented the pictures from the ordinary relatively benign type? The classical form of Kaposi's sarcoma was a plaque disease which occurred ordinarily on the backs of the hands and feet and legs, slightly elevated and indurated, violaceous in color; and he wished to know how the differentiation between the ordinary disseminated type of sarcoma and the typical Kaposi type was made.

DR. LIEBERTHAL said that he looked over the illustrations and agreed with the diagnosis. In reference to the remark by Dr. Wise regarding the disease in Americans he stated that of four cases reported by him one was that of an American. The striking feature was that the majority of these cases occurred in foreigners in lowly walks of life. He had found that injury preceded the development of the lesions in some cases. In the beginning the lesions were bluish and soft, gradually becoming quite firm, those on the feet even showing cornification and cup shape. In his own specimens it was shown that the infiltration commenced in the adventitia and gradually penetrated the whole wall of the blood vessels. The speaker had performed a necropsy on one of his cases which disclosed metastases in all organs.

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8. Nishimura: Centralbl. f. allg. Path. **22**:10, 1910.

DR. LITTLE said that four cases had been shown in the English race quite recently in London, but they were not at all convinced that the condition was at all related to sarcomatosis. The name was probably a misnomer. In his opinion the tumor formation in Dr. Cole's case was very exceptional indeed.

DR. COLE stated that neither of his cases had occurred in Americans; one patient was a Russian Jew and the other an Italian, and these were the people who were usually affected with this disease. He agreed that it was not a sarcoma. When they were differentiated it was readily found that in Kaposi's disease there was the early hemorrhage and not the homogeneous character of cell infiltration that occurred in sarcoma. Without the condition of hemorrhage it might be hard to differentiate, but this made it possible to do so readily.

In the early lesions there was no resemblance to granuloma pyogenicum. A little later some of them had that appearance but this was not the case histologically.

He said that he had quoted Dr. Lieberthal in regard to the treatment, but had not read that part of his paper. In one patient the disease had lasted for about twenty-five years and seemed almost like melanotic sarcoma, but of course it was not, for had it been, the man would not have lived that length of time.

OSSEOUS FORMATION IN LUPUS ERYTHEMATOSUS*

WILLIAM B. TRIMBLE, M.D.

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NEW YORK

The following case seems to be sufficiently unusual and to have enough interesting features, both clinical and microscopic, to justify recording it.

REPORT OF CASE

History.—Recently, the patient presented himself at the college clinic and the following notes were made: The man was of medium weight and height and apparently in good physical condition; aged 42, born in Austria, occupation, painter. His family history had no bearing on the condition; his father's death was caused by asthma at 62; his mother died of pneumonia at 58. There were ten children in the family—six boys and four girls—all alive and well, except one brother whose death was caused by "stomach trouble," as the patient expressed it.

His past history was of little consequence. He had been in excellent health all his life with the exception of the skin affection. At the age of 37, five years previous to this writing, he had noticed a small scaly lesion just in front of the left ear; this lesion persisted, was soon followed by others, the characters of which were scaling, dusky redness and central atrophy. At the time of examination, he had flat superficial scars on both sides of the face, which were frankly those of erythematous lupus. Three years after the outbreak on the face, he noticed quite accidently a large node in his right buttock.

Physical Examination.—Examination of this region revealed an area approximately somewhat larger than a silver dollar, of dull redness, in the center of which was a group of small atrophic macules. The border of the erythema was imperceptible, shading off into the healthy skin; a slight scaling was noticeable and some of the atrophic spots had coalesced, until it was safe to say that the whole central area was undergoing or had undergone atrophy.

This atrophied center must have been confined to the uppermost layers of the skin as it was extremely superficial, though typical from a clinical standpoint, in that it was a dead ivory white in appearance. There were no telangiectases observed. On attempting to pick up the skin between the fingers, it was noticed that it was attached to the underlying tissues and further palpation brought out the fact that a brawny, deep seated induration existed underneath. The whole lesion when surrounded by the fingers was of boardlike hardness and seemingly larger than a hen's egg. The outline was irregular, though it was about 4 inches in one diameter and 3 in the other.

The urine examination revealed nothing of consequence and the complement fixation reaction was negative.

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* Read before the Forty-Second Annual Meeting of the American Dermatological Association, held at Atlantic City, N. J., June 16-18, 1919.

HISTOPATHOLOGY

The first biopsy was a failure; it was done with a cutaneous punch, and did not go deep enough to get more than the superficial layers of skin; the specimen was however cut and stained, though reported as mildly inflammatory tissue with no definite diagnosis.

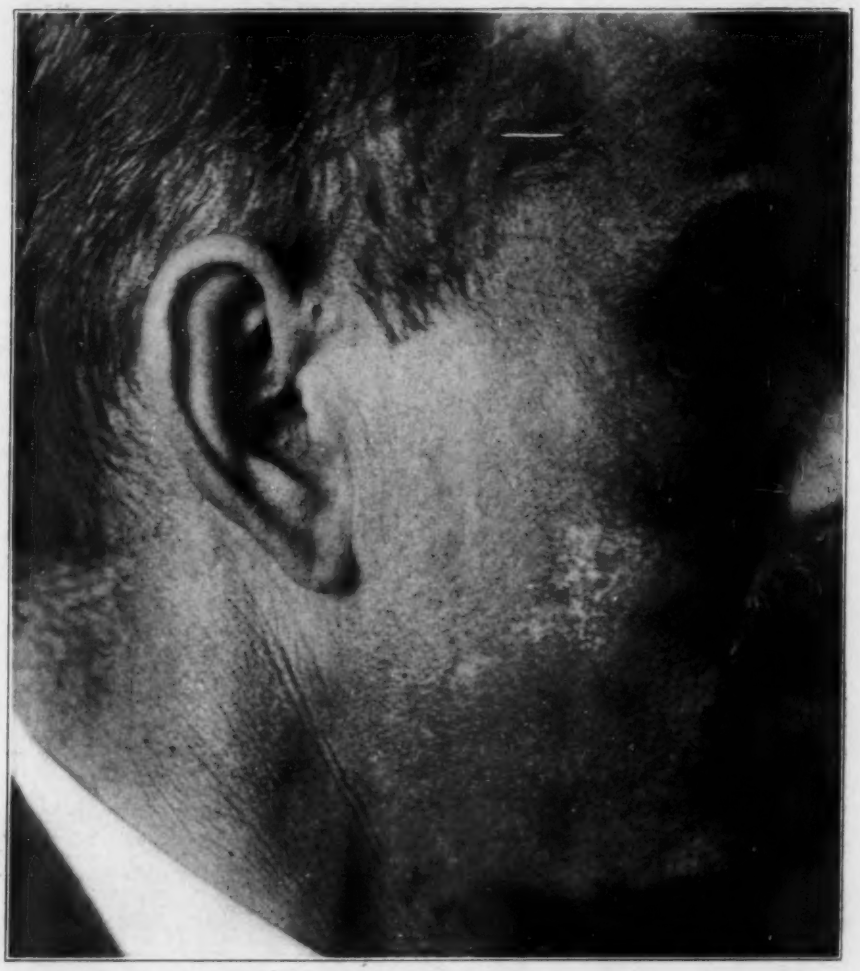

Fig. 1.—Lesion on right cheek. Superficial atrophy following healing of lupus erythematosus.

Another attempt was made to remove a piece of tissue by elliptical incision with a scalpel; this was more successful, though the incision was not as deep as desired, as the scalpel struck the hard mass, and no impression could be made on it.

The pathologic examination on this specimen was reported as chronic inflammatory tissue with calcareous deposits. The patient was eventually advised to have the whole mass removed by surgical operation; this was done in due time by Dr. George D. Stewart. The patient's recovery was uneventful.

Fig. 2.—Original lesion on right buttock. Dark shadowed area represents dusky redness; superficial atrophy below. Small round crusted lesion marks biopsy punch.

The piece of tissue removed was about 4 by 3 inches in size and perhaps 2 inches deep. Viewed on the cut surface, one could see as well as feel the thin edge of what was apparently bony tissue. The bony layer, which was about on the level with the subcutaneous fat,

ran under the skin, throughout practically the whole specimen, and any attempt at puncture or incision from the top would strike this ledge.

Suitable pieces of this specimen were obtained for further study and a pathologic examination was made by Dr. D. S. D. Jessup.

MACROSCOPIC EXAMINATION

The gross specimen is a section from the skin with the underlying tissues measuring 10 by 8.5 by 1.5 cm. in depth. On section the tissue cuts with a gritty feeling, small areas of calcareous deposits being scattered through the deeper layers of the skin and subcutaneous fat.

MICROSCOPIC EXAMINATION

The epidermis presents a finely corrugated border in one portion, where the calcareous deposit lies deep in the corium and subcutaneous tissue. Where the deposit approaches nearer the surface the collagen takes a bluish stain and the epidermic border is slightly depressed; there is hyperplasia of the stratum mucosum and loss of the pegs in areas. In the areas of corrugated epidermis there is some hyperkeratosis; the depressions apparently corresponding to the mouths of the hair follicles, are filled with keratotic material. An occasional sweat gland duct is seen, but in the section examined, no hairs. The sweat gland coils appear normal in numbers; a few of the groups show edema of the cells.

The papillary bodies appear normal except that the elastic tissue fibers are decreased in number, and are practically absent where the pegs are compressed or missing. In the area above referred to, where calcareous material is found near the papillary layer, there is marked infiltration of the upper portion of the corium with round cells and cells which are probably necrotic. The supporting tissue is small in amount. The tissue immediately beneath shows irregular shaped islands of calcareous material located sometimes in dense fibrous tissue, sometimes in fibrous tissue of looser structure, more cellular, with fatty tissue in the immediate neighborhood, and sometimes in areas in which there is evidence of hemorrhage.

Beginning around the sweat coils and smaller blood vessels, through the entire specimen there is round cell exudation. This appears sometimes as small islands of round cells with a few blood vessels, the lumina of some of which are invisible. This round cell exudation does not bear a definite relation to the calcareous deposit. Elastic tissue fibrils are scattered throughout as are also collagen fibrils. No elastic tissue fibrils are found in the areas of round cell exudation.

CHEMICAL EXAMINATION

The chemical examination was made by Prof. John Mandel, who reported the tissue as bone formation. His method, briefly, consisted of allowing the specimen to soak for a long time in dilute hydrochloric acid to dissolve bone tissue.

Fig. 3.—Linear scar following excision operation.

This solution was treated with ammonium oxalate, which causes a precipitate of calcium oxalate. Ammonium molybdate added to the original solution will prove the presence of calcium phosphate by precipitation, and calcium carbonate by effervescence.

All of these tests were positive, consequently his report.

COMMENT

Several diagnoses were taken into consideration at the original clinical examination. They were: organization, fibrosis, etc., following old inflammatory changes; deep seated sarcoid; localized scleroderma, and lupus erythematosus. All of these ideas, with the exception of the first, were based merely on visualizing the lesion, taking into consideration the color, scaling and atrophy. The first — fibrosis and organization — seemed a reasonable diagnosis, as such changes could even account for the superficial atrophy from pressure on the skin capillaries; the patient, however, denied emphatically any injury or intramuscular injection, which caused the supposition to be discarded. Sarcoid was brought to mind on account of the depth of the lesion and the color, though mainly because the writer had seen several cases of the Darier-Roussy type, with typical lesions of erythematous lupus on the face; it was not given very serious consideration, as a single lesion of such ivory-like hardness in that locality was not especially characteristic.

The density and sclerotic nature of the lesion with the epidermic atrophy pointed strongly to the diagnosis of localized scleroderma; it was impossble, however, to get away from the fact that inflammation existed, and scleroderma is an atrophy and not an inflammation. As already mentioned, the skin over the induration was dusky red, scaly and atrophied, so the remaining alternative was to believe all the existing lesons — that is, those of the face and buttock — to be the same; and this was the ultimate conclusion. Of what the indurated mass consisted remained in obscurity until a rather elaborate study had been made, the result of which has already been given. Whether to look on all the lesions as one process, or whether to consider those of the face as lupus erythematosus and the one on the buttock as an entirely different entity, was the question to be solved.

This has been solved in part by later developments in the case yet to be described. The patient was kept under observation and after a lapse of some months the lesions on the face began to take on renewed activity, new ones rapidly appeared, spread to the neck, shoulders, arms and hands and in a very short time the case developed into one of typical erythematous lupus of the so-called disseminate variety. Simultaneously with this new outbreak, inflammatory action again appeared in and around the scar on the buttock, and the integument in that location assumed the same appearance as the other lesions, with subacute inflammation and scaling.

This phenomenon seemingly was fairly good clinical evidence that the buttock lesion was erythematous lupus; it could not be proved pathologically, although another section of skin was removed following

the recurrence; after all, the microscopic picture of lupus erythematosus is not so characteristic that it could furnish absolute proof.

No attempt was made to review the literature; if any one has reported a similar case, priority will not be contested.

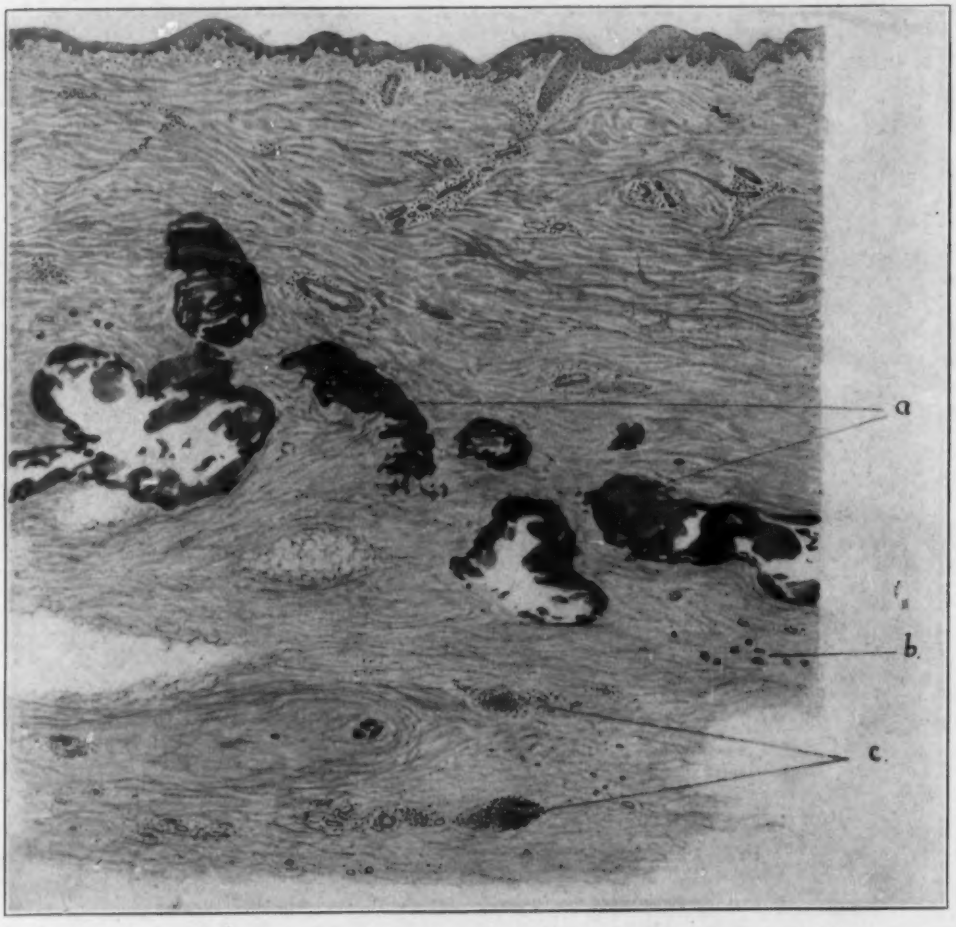

Fig. 4.—Calcareous deposits, *a;* scattered giant cells lying in the connective tissue near the calcareous deposits, *b;* areas composed of small round cells, *c.*

DISCUSSION

Dr. Pollitzer was of the opinion that the paper offered not the slightest proof of bone formation. He believed it was a case of the deposit of lime salts, which was very interesting as an observation though not very rare; but the title of the paper was misleading. The chemical examination simply proved the presence of a calcareous deposit and not the formation of bone. The microscopic examination was the only thing that could prove the formation of bone and that had not been presented. The formation of bone in the skin was very rare, but had been recorded in a small number of cases. A few years ago he had published a unique case of scleroderma in which there was

bone formation in the skin, clinically visible and microscopically demonstrated. Calcareous deposits in the skin occurred in many conditions; they should not be confused with bone formation.

DR. ZEISLER stated that he had only once come across anything that reminded him of the case which Dr. Trimble had presented. Several years ago he was consulted by a young woman who had a peculiar spot on her forehead. He could not say whether it was a cyst or something else, but began to pick at it and to his great amazement dug out a small bony mass. It was perfectly round and easy to take away from the surrounding tissue and was about the size of a three carat pearl. This was the only thing of the sort that he had ever seen.

DR. LITTLE thought that Dr. Pollitzer had made a very good correction of the title. He had seen cases of diffuse calcinosis, and that was probably what this case was.

DR. TRIMBLE believed that the tests he had related, taken with the clinical evidence, was enough to prove that the growth was bone. He was under the impression that calcareous deposits could be cut through with a strong, sharp knife. In this case, the knife made no impression on the growth. The chemist was positive in his opinion that he was dealing with bony tissue. The association with lupus erythematosus was to his mind the interesting feature. Whether it was directly connected with the pathologic process of that disease, or whether it was an independent lesion occurring in a patient with lupus erythematosus, was a question. He was firmly of the belief, however, after seeing and treating the case and having the various tests made, that it was bone.

VII.—CAMPHOR OIL TUMORS*

WILLIAM H. MOOK, M.D., AND WILLIAM G. WANDER, M.D.
ST. LOUIS

That tumors may be produced by the subcutaneous injection of camphor oil is an established fact.

When we diagnosed our first case in 1914, we thought perhaps an individual idiosyncrasy to the camphor or an error in the drug had produced a sarcoid. We have now collected six cases as evidence of the danger of the indiscriminate use of this remedy as practiced in operating rooms for collapse and in the treatment of very severe illness, such as the pneumonia that occurred in the recent epidemic of influenza. The cases we offer are from the service of Engman and Mook at the Barnard Free Skin and Cancer Hospital and the Washington University Clinic, and from their private practice.

REPORT OF CASES

CASE 1.—*History.*—Mrs. X., aged 31, wife of a physician, was referred by Dr. C. H. Nielson, April 24, 1913, for diagnosis and treatment for some tumor masses in both arms. Six weeks before she noticed a small "lump" forming on the outer surface of about the middle third of the right arm. She stated that it was round, flat, slightly elevated, rather hard and inflamed-looking, but only slightly tender to the touch. In a short time she noticed a similar lesion on the left arm. Both gradually became larger.

She gave no history of previous skin trouble except for acne on her back and an oily skin. The lymphatic glands were nowhere perceptibly large. She had not been feeling well for several months. In the fall of 1918 she suffered from gastric disturbance and she felt languid and nervous. In January, 1913, she felt worse and was thought to have ulcer of the stomach. She spent the month of March, 1913, in bed with what was supposed to be nervous prostration. When first seen by us, in April, her health was better but the yellowish color of the skin indicated that she was not well. The tumors at the time were thought to be leukemia cutis.

Examination.—Careful examination of the right arm revealed, in the middle third, an area larger than the palm of the hand with the longest diameter running transversely. The center was of a purplish color, this discoloration gradually fading outward into the normal skin. The surface over the area was sensitive to the touch, smooth, and with no crusting or scaling. The mass was circumscribed with the margins very distinct and, instead of being rounded as one would expect, they were sharply defined with linear edges and sharp angles. The mass felt doughy and extended deep into the tissue. By deeper

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* Studies, reports and observations from the dermatological departments of the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, St. Louis, Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

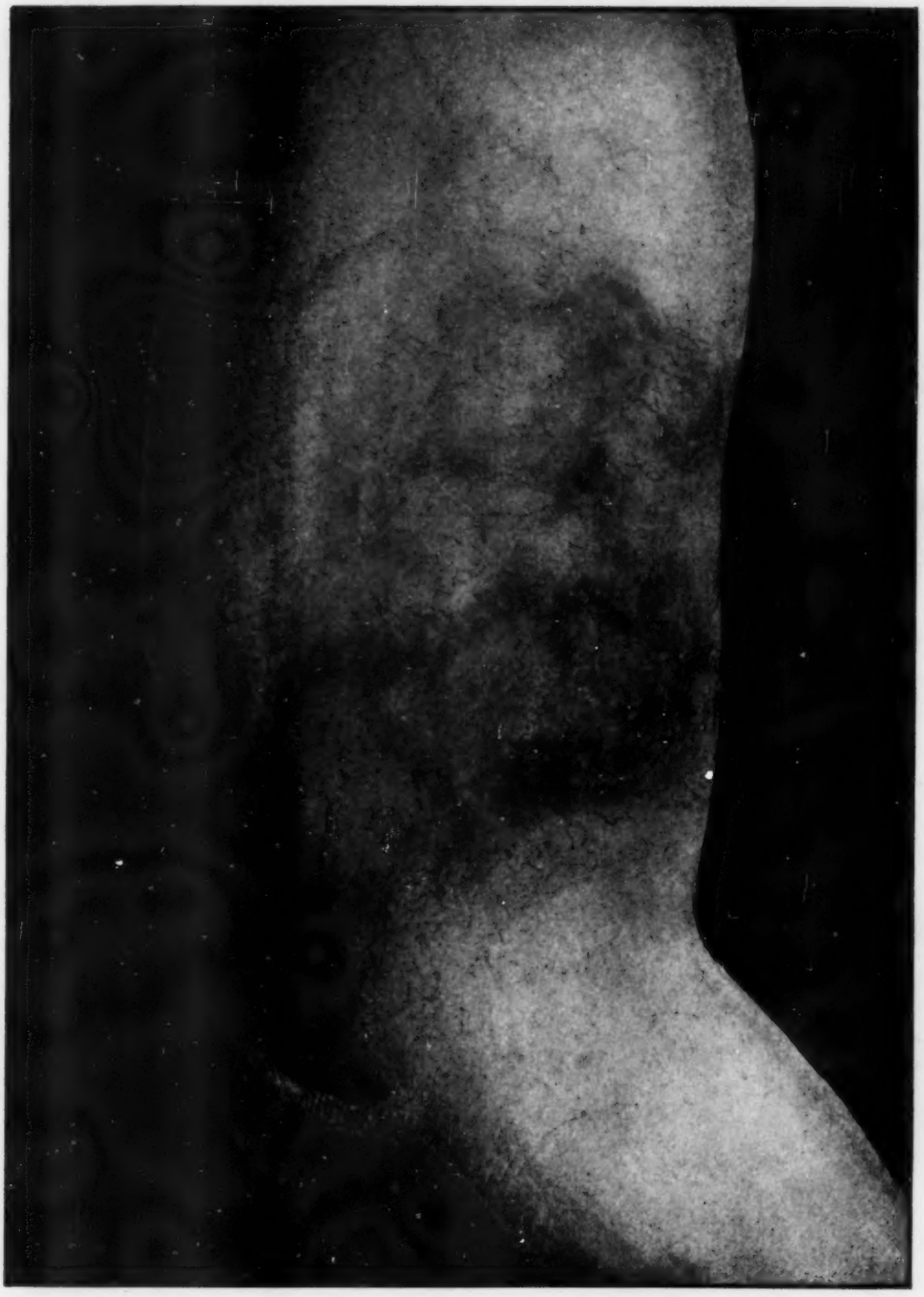

Fig. 1.—Right arm in Case 4, showing the inflammation of the lower two-thirds of the arm that threatens necrosis. The discoloration varies with the degree of inflammation.

pressure around the edges, small pea-like nodules could be felt. They were in all respects like the larger mass, their only differences being size and lack of discoloration on the surface.

On the inner surface of the arm small, angular tumors could be followed almost to the axilla in a chain formation. On the left arm there was a similar condition, but situated anteriorly instead of on the outer surface as on the right arm. Here the main tumor was an inch wide and four inches long, extending from one inch above the anterior surface of the elbow obliquely across the arm to the axilla. The notation reads: "It feels as if paraffin had been injected subcutaneously." The smaller chain-like tumors existed here as on the right side and could be felt more markedly several inches away from the main tumor. No similar lesions could be found on the body. There was no discoloration on the left arm, the surface being normal in color and the lesions discoverable only by examination.

Course and Treatment.—The patient returned on Oct. 11, 1913, for observation. A small section was excised and sent to a general pathologist who pronounced it tuberculosis. She was accordingly given roentgen-ray treatment over a period of several months.

April 29, 1914, she returned again and the tumors were still present but smaller. In going over her history very thoroughly she stated that nine months before the tumors first appeared she had had a severe operation for gallstones. She was unconscious for several days and during that time she received many injections of camphor oil in the arms. A woman friend of hers, strange to say, had an operation on the same day for the same trouble and she, also, received the camphor oil injections. She, too, developed the same tumors, though they were smaller in number and in size. The conclusion was immediately reached that the camphor oil in the sites of the injections had formed tumor masses such as follow paraffin injections.

She was last seen on Sept. 11, 1914, and at that time the lesions were softer; some had partially disappeared, and they were probably becoming absorbed. She did not return for further examination, and her husband has failed to answer a recent letter of inquiry as to her present condition (see addenda).

The following letter was received just as the manuscript was being mailed for publication:

Your letter of recent date forwarded to me here.

Yes, it was my wife whose arms you treated in 1913-1914. I have no data as to how many injections of camphorated oil were given her, she had them every fifteen minutes for several hours after coming from the operating table, probably two or three dozen doses.

Her arms were swollen, hard and painful for some time afterward, but seemed to be entirely well for eighteen months. She did not have much treatment for her arms before going to you—some external applications and arsenic internally.

After leaving St. Louis, my wife consulted Dr. X. at X. He advised operation and in July, 1915, operated on her arms, removing all the diseased portions. His laboratory diagnosis was tuberculosis. Recovery was uneventful and there has been no recurrence.

CASE 2.—*History.*—Mrs. C. P., aged 29, reported to the clinic Feb. 28, 1917, was admitted to the Barnard Hospital, March 5, 1917, and was discharged, March 18, 1917, with the diagnosis, tumors following camphor oil injections.

Family History.—Her parents are living. Two brothers and one sister died in infancy. She has two children, aged 9 and 12.

Past History.—She had never been seriously ill until four years ago when she had a double oöphorectomy done at a local hospital, Feb. 5, 1913. She was quite ill following this operation and was given hypodermic injections of camphor oil in both arms and in the right thigh. Three injections made her

Fig. 2.—Right arm in Case 5, showing tumors near shoulder and on lower two-thirds of arm. The discoloration represents the inflammation.

arms and thigh sore at the time, and her arms ached after she reached home. She had several attacks of influenza that winter and is just recovering from the last attack.

Present Illness.—Two weeks ago she noticed some small tumor masses under the skin of the left arm on the outer surface. These tumor masses coalesced, forming large indurated tumors varying in size from 2.5 cm. to 10 cm. A week later the same condition appeared in the right arm and thigh. Some of the lesions are so indurated that they feel as if there were concrete or bone tissue beneath the skin. They are slightly inflammatory and painful only on pressure.

When seen again on Sept. 5, 1919, the tumors were still about the same size as when she was discharged from the hospital, two and one-half years before. They had neither increased nor decreased in size and the arm circulation was perfectly balanced.

CASE 3.—*History.*—Mrs. P. L., aged 23, white, married, complained of lumps and nodules in both arms and the right breast.

The patient was operated on for appendicitis in 1913, at which time she was given camphor oil injections at the points where lumps are now found. During the year following, the patient noticed redness over the sites of the injections after rubbing them but the tumor masses were not noticed until a year after the injections. While continually increasing in size and "running together," no other changes were noticed until about a year ago (1918), five years after the injections, when the masses began to be painful, and a rather sharp, sticking pain was noticed, especially after exercise.

Examination.—On examination, this case presented no change in the skin surface. There was no discoloration and only slight evidence of any swelling. Palpation disclosed, in both arms and in the right breast, deeply situated masses, not attached to the skin, and varying in size, the largest being about 1 inch in diameter. Small nodules about the size of a pea ran in beaded fashion toward the shoulder, in both the arms and the breast. From the largest mass, just above the external condyle of the humerus, a piece was excised for study.

CASE 4.—*History.*—Miss A. R., aged 32, had been in good health until the middle of December, 1918, when she had influenza followed by a severe pneumonia. At the crisis of the pneumonia, she stated, she was partially unconscious for about five days and at this time she received about eight injections of camphor oil in the right arm and three or four in the left. For some time afterward her right arm was weak and the sites of injection were tender, but she had no actual pain.

She paid no attention to her arms until June, 1919, six months later, when she again consulted her doctor about the "lumps" in her arms. He said they were not due to the injections because there was a tumefaction on the inner surface of the right arm and no injections had been given in this area. The tumors were increasing in size, but there was hardly any perceptible redness. Later in June, six and one-half months after the injections, they began to increase rather rapidly in size and became red, inflamed, and somewhat painful on pressure.

Examination.—They continued to get larger and more inflamed until September, 1919, nine months after the injections, the entire anterior, outer, and posterior aspects of the right arm were mottled a bluish-red color and were swollen, hard and very infiltrated. The local temperature was considerably higher than that of the normal skin. The mass was lobulated and around the periphery the edges were linear and very sharply differentiated from the adjacent tissue, with distinctly marked angles, instead of merging gradually

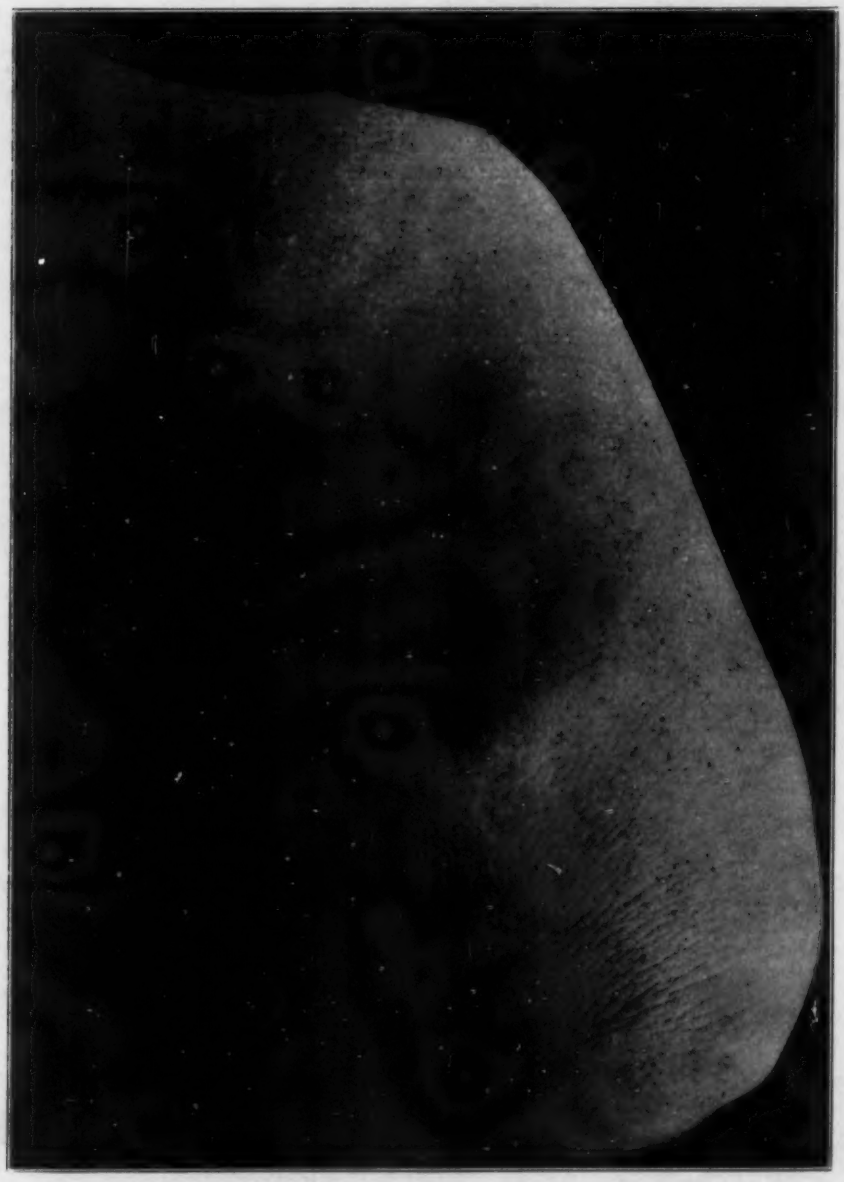

Fig. 3.—Right arm in Case 6, camphor oil tumors, showing tumor masses involving lower two-thirds of arm.

with the normal tissue. The inner aspect of the arm was represented by a wide circular band of infiltration and reddened, and here the inflammation was a little more acute. The whole process completely encircled the arm just above the elbow in an infiltrated band and had so interfered with the return circulation of the arm that edema of the hand and forearm was produced.

The left arm had a smaller, similarly inflamed tumor mass just above the elbow but it was much smaller and only on the outer aspect. Extending downward over the external surfaces of both elbows and on to the forearms for a distance of 8 cm. on the right arm and 6 cm. on the left, were the same doughy infiltrations with angular edges, triangular in shape, and with the apices pointing downward on the forearms. They were slightly reddened but not so inflamed as the earlier arm lesions. Small bead-like chains of little tumors could be felt in long strands around the periphery of the tumor proper and also extending upward toward the right axilla, like metastatic malignant tumors growing along lymph channels. These processes were obviously the result of the oil seeping its way along nonresistant paths such as the lymph channels, or between muscle fibers. The right upper chest and supraclavicular space were somewhat swollen, but showed no tumor process. The dilated superficial veins indicated this swelling to be secondary to the circulatory obstruction in the arm.

CASE 5.—*History.*—Mrs. F., aged 45, appeared for diagnosis, Feb. 15, 1919. One and one-half years before she had had her ovaries and tubes removed. She was very ill and camphor oil was injected into her thighs and arms. Four weeks after the injections she noticed "lumps" forming in her arms, the right arm being affected first. Within three months the tumors had fully developed.

Examination.—Both arms were mottled a bluish red over the tumor areas. On the left arm was a hard infiltration involving the outer aspect of the lower two-thirds. The right arm was similarly involved, perhaps not so much as the left. Just below the right shoulder was a similar tumor mass almost encircling the arm, of the same nature and 5 cm. in width. Between these two plaques was a space of healthy tissue.

The depth and consistency of the tumor masses could only be determined by palpation. They were concrete-like, lobulated, with sharply defined linear borders, and at places showed marked angles. They extended deep into the subcutaneous tissue. The inflamed tumors had a peculiar boggy feel. Running off from the tumors were deeper beaded lobules like a string of large beads. These were quite deep and some of them extended in chains to the chest wall. Similar tumor masses were observed in the thighs. The purplish blue color of the skin was due to tumors that were somewhat inflamed.

The patient said that her hands and arms became edematous and that "drawing" pains were felt occasionally in the arms, but on the whole the discomfort was not so great as would ordinarily be expected from inflamed areas of this extent.

CASE 6.—*History.*—Mrs. H. C. was referred to us by Drs. W. H. Vogt and J. H. Amerland, July 10, 1919, with the diagnosis of tumors due to camphor oil injections. The patient had been operated on for gallstones, Dec. 8, 1917, and the operation was followed by pneumonia for which she received numerous camphor oil injections during December. She underwent a second operation, Oct. 12, 1918, and received a few morphin injections but no camphor.

Six weeks before coming to us, or one and one-half years after the injections, she noticed "lumps" developing on both arms—not painful or red, but slightly pruritic. They all developed at one time and quite rapidly. Within

a week they were as large as when she came to us and were hard, doughy, almost board-like, deep infiltrations, sharply defined, with irregular outlines, angular in places, in groups and lobulated. They were bluish-red in places due to the inflammation. On the right arm the tumor mass was 5 inches long and 4 inches wide, extending transversely. The tumors on the left arm were similar in character but somewhat smaller. On the right shoulder was a tumor, 2 inches in diameter.

The following table is submitted for ease in comparing the time of development of the tumors:

COMPARISON OF TIME OF DEVELOPMENT

Case No.	Time After Injection When First Noticed	Remarks on Variations
1	9 months	None.
2	2 weeks	Arms ached immediately after injections.
3	12 months	Inflamed during the fifth year. Still present in the sixth.
4	6 months	None.
5	1 month	None.
6	18 months	None.

In most instances, inflammatory activity of the lesions called the patient's attention to the trouble. That this may vary will be seen from the foregoing table in which the time varied from two weeks to one and one-half years.

GENERAL CLINICAL PICTURE

Aside from the variance in time, or period of activity, the series shows six patients who developed tumors in their arms, and, in some instances, in the thighs also. All had practically these characteristics:

Following the injection of camphor oil for a previous severe illness, deep tumors appear, situated generally on the outer aspects of the lower third of one or both arms and occasionally in the shoulders, thighs or breast.

The tumors are of months' or years' duration.

If not inflamed, they have a doughy or concrete-like infiltration varying from the size of a walnut to that of an orange or larger, and are generally lobulated. The size of the tumor depends on the amount of oil injected and the extent of the individual reaction.

Instead of being rounded in outline they are linear, with definite sharp angles limiting them from the adjacent normal muscular tissue.

Bead-like infiltrations of the same nature, but smaller, may be traced toward the axilla or around the periphery, simulating the metastasis, along lymph channels, of a malignant growth.

The skin surface may or may not be elevated or discolored and some of the tumors are discoverable only on palpation. They are practically always deep in the muscle or connective tissue.

The tumors may or may not be painful or even tender. The early discomfort is usually slight.

If they are inflamed, the process is of long duration and the skin will be of various hues, from a red to a deep purple, the color depending on the congestion and amount of inflammation.

The local temperature of inflammatory tumors, of course, is higher than that in the surrounding normal skin.

In none of our cases has necrosis occurred such as is encountered in paraffinomas, but this may be due to two factors: First, the character of the tissue involved, allowing the oil to move in various directions, when the inflammation occurs, up and down the arm between the muscle fibers, along the fascia, or in the lymph spaces. No doubt if the oil were injected in the face, necrosis would occur as in paraf-

Fig. 4.—Photomicrograph, low power, of fibroma showing cavities in which camphor oil was encapsulated.

finomas, owing to the differences in tissue favoring necrosis, instead of subcutaneous distribution. The second factor is time. Since most of our marked cases are of recent observation, not enough time has elapsed to enable us to see the end-results. In one case, at least, necrosis has been expected two or three times, and the constriction of the tumors has so interfered with the circulation of the arm as to produce edema sufficient to suggest the necessity for an amputation if the obstruction becomes more complete.

In our first case, diagnosed in 1914, a piece of inflammatory tumor was excised and the diagnosis of the pathologist was tuberculosis, probably owing to its granulomatous character with many giant cells. This first characteristic led us to believe the tumors to belong to the

sarcoid class and to be due to camphor oil. In a later case, with practically no clinical inflammation, a piece was excised and the true nature of the lesions discovered.

The term "sarcoid" has been used by Darier and Boeck to differentiate subcutaneous tumors that are granulomas, due in some instances to tuberculosis, while in others the origin is unknown. In some clinical respects the tumors described in this report might at first be so classified in that the inflammatory tumors are granulomas also, but now that their etiologic factor has been clearly established, they no longer belong to the sarcoid group, since they are mechanically-produced, inflammatory tumors, primarily fibromas and later, granulomas.

Ever since paraffin has been injected subcutaneously to remedy various defects, we have been well acquainted with the possible subsequent tumor development and activity. In most instances no difficulty is experienced, for generally the patient is aware that the tumors are due to paraffin when he applies for treatment.

The tumors due to the injection of camphor oil subcutaneously greatly resemble the paraffinomas as to their slow development, their peculiar concrete-like type of infiltration, and the length of time after injection in which they develop. Their location, however, is so totally different from that of paraffinomas as even not to cause suspicion that they are of the same nature and due to the same cause, namely, the subcutaneous injection of an oil, probably mineral.

A theory was advanced formerly that paraffin injected subcutaneously later became organized with the connective tissue and thus remedied the defect for which it was injected. Evidently, this was erroneous. The mineral oil acted as an irritant and a fibroma resulted. If circulatory balance was lost, a granuloma, with ultimate necrosis, was the end result.

A noninflammatory nodule was selected for biopsy as the best tissue in which to study the growth, as the inflammatory lesions represent the end result rather than the early development of the process. We feared to excise portions of very inflammatory lesions and all we have observed have been too large for complete excision.

HISTOPATHOLOGY

The first impression one receives when examining a section of the lesion under low power is that he is looking at a fibroma, honeycombed with holes of various sizes, irregularly distributed, up to 3 mm. in diameter, and so numerous as to remind one of a cross section of a piece of sponge. In some areas, there is a fretwork design with the thinnest limiting network, giving somewhat the appearance of fat tissue.

When the oil is injected, it is deposited between the connective tissue and in the lymph spaces, remaining there as an inert foreign body. The localized pressure stimulates a very low grade of temporary inflammation with the gradual production of new connective and fibrous tissue, and a fibroma is gradually produced encapsulating the oil.

The epidermis is unchanged in the sections owing to the depth of the tumor, though later, perhaps, it would undoubtedly alter its char-

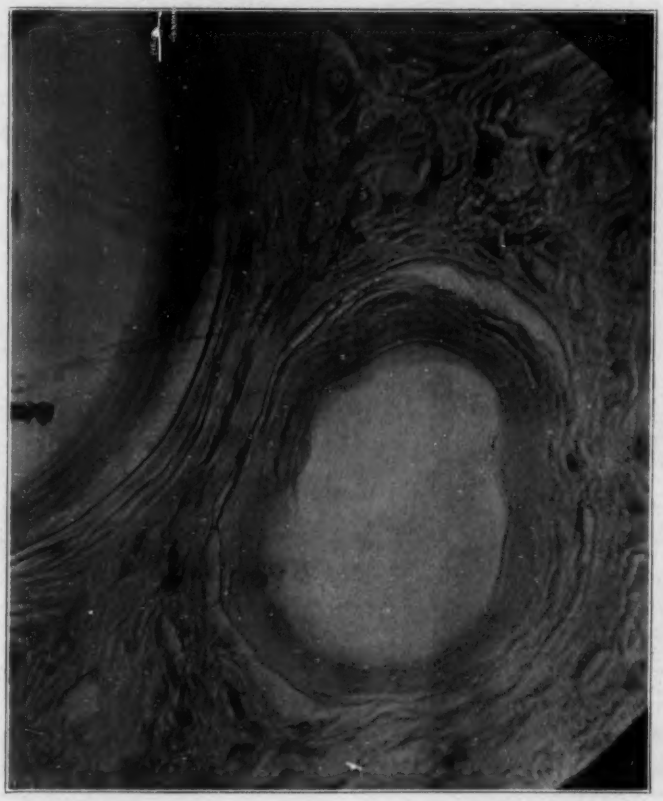

Fig. 5.—Photomicrograph, high power, of the cavities of fibrous tissue containing the encapsulated oil; the lining fibers have no nuclei.

acter as the late secondary inflammation develops, pushing upward, following the lines of least resistance, flattening from pressure and other secondary changes, according to the degree of activity.

Elastic Tissue.—The elastic immediately under the epidermis is unchanged, but in the lesion itself it is almost entirely destroyed, there

being only a few strands immediately around the blood vessels. The tumor might be outlined in its entirety by the absence of elastic tissue in the lesion and its presence in the normal tissue surrounding it.

Lesion a Fibroma.—The lesion in its early state is a true fibroma and, when activity occurs, it becomes a granuloma with giant cells. It consists of long bands of fibrous and connective tissue. The longitudinal fibers are separated, parallel, and evidently held apart by the oil.

Oil Cysts.—That the oil is held in large and small drops is evidenced by the almost perfectly spherical spaces from which it has been removed in the process of mounting. The capsules consist of from two to five concentric rings of fibrous connective tissue, according to size. The inner one lining the cavity is perfect, without any break in its continuity, thus preventing the escape of the oil—in other words, the cavities are cystic in character. These lining bands of fibrous tissue are evidently of long duration and contain no nuclei. They have different tinctorial affinities and attract the basic instead of the acid stains, the inner layers mostly taking the basic stains.

While the serial sections have not been completed for this preliminary report, there is evidence that these encapsulated drops of oil are spherical or globular, forming oil cysts, in that some sections show round platelets of fibrous tissue where the microtome knife has just begun to cut into the mass on a tangent and yet not cut into the capsule proper. These open spaces are almost the counterpart of those described in paraffinomas by Heidingsfeld as resembling aerated Swiss cheese.[1]

The fibrous and connective tissue between these round spaces is a little different from the capsule tissue in that nuclei are present. It is held apart and honeycombed by the oil, forming round and oval spaces throughout the lesion, independent of the oil capsules. In some spaces the tension has been so great as to thin the limiting strands into fretwork like fat tissue.

As in this case the tumor was quite deep and the amount of clinical inflammation negligible, the amount of microscopic evidence of inflammation was very small. In occasional areas small groups of leukocytes were observed, but not in dense numbers; generally they were in the vicinity of and around blood vessels. The changes were early and fortunately gave a better idea as to the cause of the activity than is described by students of paraffinomas in which they found very marked inflammatory changes with many giant cells. As no giant cells are

1. Heidingsfeld, M. F.: J. Cutan. Dis. **24**:513, 1906; Heidingsfeld, M. F.: A Further Contribution to the Histopathology of Paraffin Prosthesis, J. A. M. A. **51**:2028, 1908; Ormsby, O. S.: Diseases of the Skin, Ed. 1, Philadelphia, Lea & Febiger, 1915, p. 604.

present in the sections of this early lesion, like those described in paraffinomas, they undoubtedly belong to the terminal stages of activity, thus giving a microscopic picture of a granuloma resembling a tuberculid.

Blood Vessels. — A very striking feature of the sections is the thickening of the blood vessels and these thickened vessels probably explain the changes the tumors undergo when they become active after months or years of quiescence in either camphor oil tumors or paraffinomas.

New blood vessels are formed and become enormously thickened. The walls of capillaries are greatly thickened, consisting of hypertrophic cells with nuclei, and everywhere show evidence of distention. A few fibers of elastic tissue, best seen with Weigert's stain, are generally present around each vessel. The elastic tissue around vessels is the last to be destroyed by the process.

Cause of Tumor Activity.—As long as compensatory circulation is present in the tumor masses no trouble ensues, but after varying periods of time the circulatory balance is lost, venous stasis develops, leukocytes escape, localized edema occurs, and a mechanical hypostatic congestion is produced with the resulting gross clinical picture that is characteristic of all patients: various degrees of congestion, inflammation, interference of the arm circulation—all depending on the obstruction, or even constriction, caused by the presence of fibromas with their encapsulated masses of oil.

The phagocytosis with giant cell formation described in paraffinomas represents nature's effort to restore a disturbed circulation.

The sweat glands were not disturbed except to be pushed aside by the fibrous tissue. There was no evidence of malignancy—the future will determine that.

The similarity of the clinical behavior, as well as the histologic picture, of the camphor oil tumors and paraffinomas is striking. In one case in which hot applications and massage were instituted, the tumors increased in size and invaded areas hitherto not involved, a process sometimes observed in the activity of a paraffinoma.

TREATMENT

Rest and elevation of the affected extremities have so far best alleviated the inflammation that these tumors undergo. This should be continued over long periods of time or until fibrosis is as complete as possible. Excision would be ideal, but, so far, all the lesions we have seen have been too extensive for this procedure.

Heat and massage are contraindicated, for the two patients who tried them increased the inflammation and the tumors were disseminated into larger areas.

Roentgen-ray treatment, though recommended for paraffinomas and of doubtful value in our first case, would seem to be more or less dangerous owing to its possible effect on the already disturbed circulatory balance in the tumor mass.

Nature will probably produce a fibrosis with newly formed blood vessels to take care of the more or less permanent condition. In time, atrophy may follow the subcutaneous hypertrophy of connective and fibrous tissue.

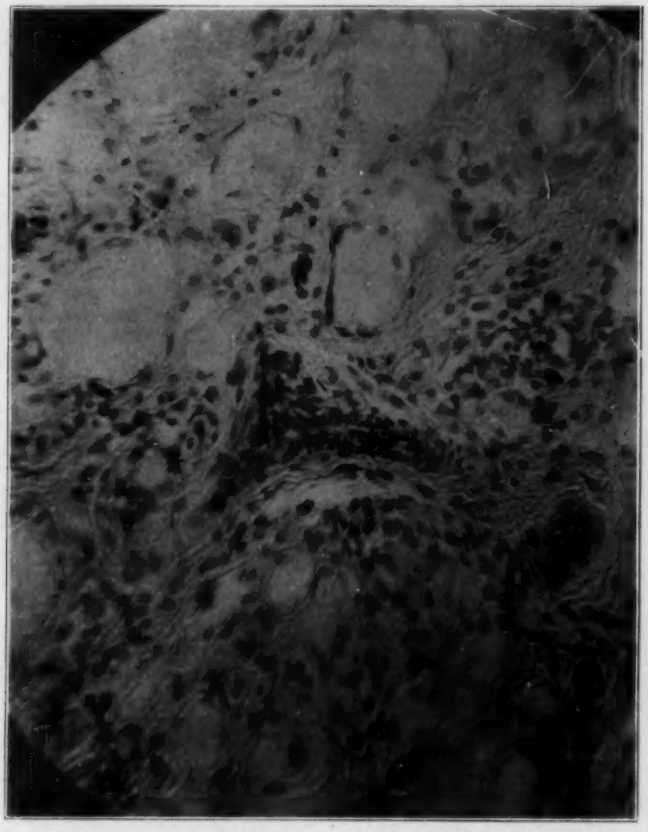

Fig. 6.—Photomicrograph, high power, oil immersion, showing few inflammatory cells around a bifurcating blood vessel in the center of the camphor oil tumor where the tumor activity originates.

THE MINERAL OIL

The necessarily inert and stable character of the oil in the globules from excised tissue suggests at once that the oil might be a mineral or paraffin oil. Parallel staining reactions between oil from the tissue and

mineral oil strengthens this suggestion; both stain with sudan III, but fail to stain with osmic acid.

In at least two of the cases, the camphor oil was manufactured by a well-known drug manufacturer, and in one we obtained some of the oil in the same batch that was bought by a local druggist. The camphor was put up in a mineral oil and, in all respects, reacted to the same tests as the oil recovered from tissue excised from one of the patients.

O. Jacob and J. L. Faure[2] have reported similar cases of tumors produced by camphor prepared with the liquid petrolatum.

Our studies thus far have shown that mineral oil may remain as an inert foreign body in tissue, whether injected as paraffin to correct facial defects, or as camphor oil injected in the arms, thighs or breasts, as a stimulant during an operation or any severe illness.

The inflammatory tumors that may result from either are more or less serious and the use of camphor oil as a stimulant should be discontinued until researches show that it can be made innocuous with a vegetable or animal oil, or some other vehicle that will be absorbed immediately after injection with no ultimate bad effects.

We have not thus far determined whether animal or vegetable oils will produce the same tumor reaction as the mineral oil — one of us is carrying on this investigation. Nor can we explain the comparatively small number of patients who react in this manner when we consider the long and universal use of camphor oil injected as a stimulant, but we believe it to be of frequent occurrence. Liquid paraffin has long been used as a vehicle for salicylate of mercury and calomel and every one who uses these remedies as injections in the buttocks is familiar with the persistence of nodules that may remain for years. We sent for one of our patients who had received numerous injections of 10 per cent. salicylate of mercury in liquid paraffin over five years ago. She still has angular nodules deep in the muscles. They are not inflammatory and have caused no inconvenience. They are probably of the same nature as those due to camphor oil, but biopsy was refused.

The danger of emboli from paraffin oil as a vehicle for mercurials has long been known and these cases but add another warning against the use of the product. Heidingsfield mentions Febriger's case of death from the injection of olive oil. The necropsy revealed fat emboli in all the viscera, particularly the lungs and the brain.

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2. Jacob, O., and Faure-Fremet: Rev. de chir. **54**:221 (Sept.-Oct.) 1917; Faure, J. L.: Bull. et mém. Soc. med. de chir. de Par. **43**:525, 1917; Jacob, O.: Bull. de la Soc. de Biol. **80**:571, 1917.

CONCLUSION

We believe that it is dangerous to use mineral oil as a vehicle for any remedy to be injected into subcutaneous tissue. This fact has been well established in regard to paraffin injections, and the tumors resulting from the injection of camphor oil incorporated in a mineral oil strengthens the conclusion.

Abstracts from Current Literature

JOURNAL OF TROPICAL MEDICINE AND HYGIENE

(Vol. 22, 1919)

COMMON DISEASES SEEN IN BRITISH HOSPITALS AS SEEN IN SIERRA LEONE. W. A. YOUNG, p. 9.

Among other diseases syphilis is common although parasyphilis is not frequently encountered—probably because the syphilitics are carried off earlier by some intercurrent disease. Primary sores are rarely seen, secondary eruptions are infrequently observed, but tertiary lesions are common, many being of the rupoid type. A positive Wassermann reaction is obtained in a large percentage of cases. Among prisoners there is a definite syndrome—pains in the back and waist, anemia, thickened veins and lethargy—which quickly yields to treatment. Infant mortality is very high, and probably accounts for the fact that congenital syphilis is rarely seen.

THE ETIOLOGY OF SPRUE, PELLAGRA AND SCURVY. LUCIUS NICHOLLS, p. 21.

According to the author, these three diseases have much in common with regard to their etiology, diet and infection bearing on each disease.

In respect to microbic infection he places sprue first, with pellagra second and scurvy last, this order being reversed in considering dietary disturbances in a causal rôle.

He discusses in detail the similarity existing in the symptoms of these diseases, stating that the *Streptococcus viridans* is the only culturable organism always present in sprue.

Good results were obtained with vaccine. He concludes that one factor in sprue is an invasion of the superficial layers of the mucosa of the alimentary tract by a streptococcus of low virulence This streptococcus cannot at present be distinguished from the *Streptococcus viridans,* which can be found in the normal mouth.

While scurvy is apparently due to a diet deficiency alone, he thinks that a bacterial factor may enter into the etiology, as surgeons in the Indian medical service state that scurvy is preventable and curable by strict attention to mouth cleanliness.

A low virulence organism of a different class may be found to be the etiologic factor in pellagra.

SOME NOTES ON THE TREATMENT OF LEPROSY. A. CONNAL, p. 37.

Four methods of treatment were tried at this asylum, namely, chaulmoogra oil, nastin, Heiser's combination of chaulmoogra oil with camphorated oil and resorcin and gynocardate of soda

A review of the case records gives the impression that not one drug alone is specific, but that a combination of methods, changing from one to another,

has given the best results in these cases. Some cases improved without drugs while some relapsed whether treated or not.

TRICOPHYTON CURRII. A. J. CHALMERS and A. MARSHALL, p. 83.

Mention is made of a case of ringworm due to this variety of tricophyton in a negro boy aged 7. No cases had been seen in Khartoum for the past five years.

Clinically the infected hairs were broken off close to the scalp and there were no inflammatory lesions.

SUDANESE EXAMPLES OF TWO COMMON HYPERKERATOSES. A. J. CHALMERS and ARTHUR INNES, p. 97.

This article deals with a case of pityriasis rubra pilaris and is opened by a discussion as to the history of the nomenclature of pityriasis rubra pilaris of Devergie and the lichens (lichen ruber acuminatus, lichen ruber planus and lichen ruber), the authors being convinced that pityriasis rubra pilaris of Devergie and lichen ruber acuminatus of Kaposi are identical. In further discussion they also conclude that pityriasis rubra pilaris is not the same as the lichen planus of Erasmus Wilson. They believe that the lichen ruber of Hebra would be more happily termed lichen neuroticus and be considered as a distinct variety belonging to the lichen planus group.

The description of this case of pityriasis rubra pilaris is very long and minute and together with the discussion not suited to abstracting. They consider it probably due to a toxin having a tuberculous origin as giant cells are seen in the sections. It should be classified as essentially a tuberculid, the hyperkeratosis being secondary. The patient, however, showed no signs of active tuberculosis.

They consider it quite distinct from acnitis, lichen nitidus and lichen scrofulosorum, though having some points of similarity of causation with ichthyosis.

Treatment with thyroid extract, alkaline baths, ointments and arsenic were all tried without any noticeable result.

A FEW NOTES ON "BOSCH-YAWS," THE DERMAL LEISHMANIASIS OF DUTCH GUIANA. E. BONNE, p. 122.

"Bosch-Yaws" was shown in 1911 to be a leishmanial skin infection presenting one or more ulcers on the uncovered parts of the body. A description is given of a lymphatic type of the disease, the nasal complications and a pseudoelephantiasis type. The natives believe that wounds from a certain type of thorn will cause the disease, but the theory is also advanced that the source may be the bites of ticks.

LICHEN SCROFULOSORUM IN THE SUDAN. A. J. CHALMERS and ARTHUR INNES, p. 153.

The authors' case was one of the usual type occurring in a negress in whom Potts' disease of long standing was the source of tuberculosis. They consider the disease to be a tuberculid due to anaphylactic action.

The patient was treated with cod-liver oil externally and internally, but the result was not known as she disappeared from observation.

BRIEF NOTES ON THE CULTURAL CHARACTERS OF TRICOPHYTON BALCANEUM CAST., THE CAUSE OF A PSEUDOPITYRIASIS CAPITIS. ALDO CASTELLANI, p. 173.

The writer found this organism in cases in Macedonia in which there was a peculiar condition of the scalp resembling a severe pityriasis sicca. Only adults were affected, the whole scalp being sometimes involved with some thinning of the hair. The action of the organism on various culture mediums is given in detail.

JAMIESON, Detroit.

SYCOSIS BARBAE. HENRY C. SEMON, Practitioner **104**:48 (Jan.) 1920.

Semon emphasizes the complex etiology of the sycoses and classifies the various types of infection and the diseases which may imitate them. He discusses seborrheic sycosis, coccogenic sycosis, tinea sycosis, lupoid and syphilitic sycosis. Special attention is given to the subject of coccogenic sycosis.

Although commonly known as barber's itch, the condition is in a large majority of cases due to self shaving with a blunt razor, numerous microscopic abrasions thus produced becoming infected with the staphylococci and streptococci present on the normal skin, and not by infection from without. Infection spreads from these foci and within a few days the result of the infection becomes apparent to the naked eye. Semon states that in the earliest stage, which he calls the irritated stage, great harm is done by the usual method of treatment with irritating antiseptics, especially ammoniated mercury ointment. He recommends that instead of a soothing lotion, preferably an alkaline calamine lotion, be used. When the second stage develops, infection coexisting with irritation, he suggests mild antiseptic applications, and prefers a solution of mercuric cyanid (1:4,000) because it is not irritating. Ointments are badly borne because they are irritating if efficiently bactericidal, and their greasy nature favors spread of the infection under the greasy protecting film.

The third stage, when the infection is firmly established in the hair follicles, would never be reached if the condition were treated properly in the earlier stages. Treatment at this time taxes the resources of the physician, and Semon finds roentgen-ray epilation best, but warns that it should not be used in acutely inflamed septic cases until the secondary dermatitis has been allayed by soothing applications. He has found vaccines practically valueless in sycosis.

SENEAR, Chicago.

PROTECTIVE FUNCTION OF SKIN (ESOPHYLAXIS). ERICH HOFFMANN, Deutsch. med. Wchnschr. **45**:155 (Nov. 6) 1919.

According to Hoffmann, and other writers whom he mentions, the skin not only guards against internal injuries but it also protects the viscera of the body from the injurious effects of disease coming from without. As proof of his assertion, Hoffmann refers to the relative freedom from involvement of the viscera in cases of extensive tuberculosis of the skin, the skin manifestations of syphilis and the various exanthematous diseases. The fact that death ensues when a considerable portion of the skin is destroyed by burns, the existence of skin allergy and immunity, and the therapeutic value of light baths are

regarded as points in favor of the theory that the skin has an "internal" protective function. Further proof is found in the histologic structure of the skin, especially of the rete malpighii, and the popular belief that the severity of the constitutional manifestations in the various exanthematous diseases varies with the extent of the skin eruption, the greater the exanthem, the less the involvement of the internal organs. Hoffmann terms the skin "the grave of parasites." The various allergic skin reactions, such as the von Pirquet, are regarded as evidence of the protective function on the part of the skin. The favorable effect of light baths, heliotherapy, etc., on the whole organism and on deeply situated pathologic conditions, is ascribed to the stimulation of an internal secretion by the epithelium of the epidermis which has a curative effect on the constitutional disease, no matter where situated. The action of the roentgen ray in the treatment of lupus is similarly explained. Hydrotherapy not only promotes the excretion of toxins by the skin, but it also stimulates its internal secretion function. The same is true of mercurial inunction and skin irritants, like mustard.

Hoffmann dwells particularly on the freedom from disease of the internal organs in cases of extensive cutaneous syphilis and lupus vulgaris. Paralysis and tabes are rarely associated with the skin lesions of tertiary syphilis, and in countries in which these skin lesions are of common occurrence, in fact, endemic, the neuro-syphilitic diseases are of infrequent occurrence. In cases of paralysis and tabes of syphilitic origin the skin lesions are very slight, hence it is probable that the skin manufactures its protective substance in sufficient quantity to exert a favorable effect on the neurosyphilitic manifestation. Hoffmann claims to have found highly virulent spirochetes in the blood at least three weeks before roseola was manifested, and he suggests that in the absence of sufficient protective skin function the nervous system is attacked. A spirocheticidal action is also ascribed to the lymph nodes. Hoffmann found that the spirochetes were more numerous in the primary than in the secondary stages of syphilis. Gumma and other tertiary manifestations in the lymphnodes are uncommon, and for this reason it may be assumed that they, too, exert protective action. A similar function is assigned to the meninges and the ectodermal brain tissues, although this does not ensure subsequent freedom from the disease, as in the case of the lymph nodes.

For this protective function of the skin, Hoffmann proposes the term esophylaxis. He believes further research will show that this function can be stimulated artificially, as, for instance, in the case of syphilis by the injection of luetin in gradually increasing doses.

F. C. Z.

VENEREAL DISEASES AS WE SEE THEM TODAY. J. E. R. McDonagh, Practitioner **104**:14 (Jan.) 1920.

McDonagh states that he wishes to sum up the successes and failures in the treatment of venereal diseases during the past six years.

The eyes of the public have been opened to the dangers of venereal diseases, and patients come earlier for treatment. The incidence of the diseases has not been reduced, however, and as a result of the exaggerated pictures which have been drawn of the rarer sequelae of the diseases, patients have become subject to venereal neurasthenia, infinitely more difficult to cure than the actual disease itself. Modern prophylactic measures, he feels, are no improvement

over micturition and the use of soap and water immediately after exposure. He is also opposed to free treatment as less control is exercised over the patient, since the less educated place little value on anything they get for nothing, while the educated take advantage of free treatment when they could afford to pay for it. A further criticism is offered against the tendency to allow laboratory tests to overshadow clinical diagnosis.

The remainder of the paper is devoted to a prolonged discussion of the value of colloidal preparations in the therapy of venereal and other diseases, the author ascribing great value to intramine as a reducing drug which enhances the efficacy of arsenic and mercury, prevents toxic effects from these drugs, vastly reduces the percentage of cases of nervous system syphilis, etc.

SENEAR, Chicago.

NONCONCOMITANCE OF SPINAL FLUID TESTS. H. C. SOLOMON, Arch. Neurol & Psychiat. **3**:49 (Jan.) 1920.

Solomon in this article evaluates the various laboratory methods of examining the cerebrospinal fluid. There are five tests. The Wassermann reaction, the tests for an increase in albumin, the test for globulin, the colloidal gold test of Lange and the cell count. Solomon points out that the tendency of the discoverers of these tests has always been to claim more or less specificity for each of them. He summarizes in his article the results of the experiences of the Boston Psychopathic Hospital in a large series of spinal fluid examinations by these different tests, and calls attention to the fact that only the positive Wassermann reaction in the spinal fluid is pathognomonic of neurosyphilis. The other tests merely indicate some inflammatory process involving the central nervous system. With the exception of the Wassermann test, none of these tests, either singly or in combination, is characteristic of any one disease. The process may be meningitis, an encephalitis, a tumor with sympathetic meningitis, inflammation following a vascular insult or injury, or a disease like multiple sclerosis; in all of these the changes in the spinal fluid are the same, showing one or more of these several reactions. He points out that no spinal fluid can be said to be negative until all of these tests have been applied.

P., Chicago.

LES TROUBLES MOTEURS DANS LE ZONA. E. BAUDOUIN and P. LANTUEJOUL, Gaz. d. hôp. **92**:1293 (Dec.) 1919.

Baudouin and Lantuejoul review the subject of motor paralysis associated with herpes zoster and note many cases recorded in literature. They state that these paralyses are a rare complication, but that all of the cases have certain points in common. The paralysis is always unilateral, and affects the same side as the zoster. The location is determined by nerve distribution and the motor trunks affected are anatomically connected with the posterior ganglions which the eruption shows to have been involved. The intensity of the paralysis is very variable. The paralysis is always flaccid, and is never accompanied by contracture. Disturbances of sensibility usually coexist, especially pain. The tendon reflexes are affected in the corresponding location. Trophic disturbances may also occur. Finally, the reactions to electric current are

changed. The motor changes usually develop later than the eruptive elements. The paralysis may last but a few days or may persist for weeks or months. It is benign, however, and finally disappears, leaving no trace.

SENEAR, Chicago.

ATTEMPTS TO OBTAIN A TRANSPLANTABLE TUMOR IN THE HIGHER SPECIES OF ANIMALS. F. C. MANN, J. Cancer Research **4**:331 (Oct.) 1919.

A mammary carcinoma in a dog was transplanted by injection into 134 dogs, some dogs receiving several inoculations. After variable periods of time the animals came to necropsy or were examined with the result that but six of these transplants were discovered, only four of which showed viable cancer cells. The same experiment was performed with twenty-five cats, using a cat fibroma and transplants for a total of forty-six inoculations. Twelve viable transplants resulted from the original tumor, but all were absorbed in the course of time. None of the secondary transplants lived. An actual transplantable tumor was not obtained in either series of experiments. The writer states that these experiments present the same problems that are met with in attempts to make autotransplantations and homotransplantations of normal tissue in higher animals.

FOERSTER, Milwaukee.

EXPERIMENTS WITH STEAM DISINFECTORS IN DESTROYING LICE IN CLOTHING. R. H. HUTCHINSON, J. Parasitology **6**:65 (Dec.) 1919.

Hutchinson carried out a number of experiments on the destruction of lice in clothing by steam, and he found that if the penetration of steam is sufficient to produce a temperature of 75 C. (167 F.) in the center of a barracks bag, all eggs and active stages of body lice will be destroyed. Efficient operation of the disinfector demands:

(1) The maintenance of a full head of steam so that 15 pounds' pressure in the disinfector is produced within five minutes, thus allowing at least ten minutes for exposure; (2) overloading must be guarded against; (3) the individual bundles must not be rolled too tightly.

SENEAR, Chicago.

A STUDY OF THE CHEMICAL COMPOSITION OF THE BLOOD IN CANCER. RUTH C. THEIS and WILLIAM S. STONE, J. Cancer Research **4**:349 (Oct.) 1919.

The examinations were performed on 189 patients in the Memorial Hospital, employing as normal values these figures:

Nonprotein nitrogen	28 to 35 mg. per 100 c.c.
Urea nitrogen	14 to 18 mg. per 100 c.c.
Uric acid	1 to 2.5 mg. per 100 c.c.
Amino acid nitrogen	7 to 8 mg. per 100 c.c.
Sugar	90 to 110 mg. per 100 c.c.

Uric acid and blood sugar content showed no appreciable abnormality in patients without renal disease, diabetes or melanoma. Nonprotein nitrogen and urea nitrogen content were low in cancer patients, these findings being at times masked by other pathologic conditions.

Amino acid nitrogen was found to be slightly above normal. Tables were compiled to show the variations with different ages and different locations of the malignancy. Attention was called to the chemical similarity of the blood in cancer and pregnancy, both of which conditions show rapid cell proliferation in the body and definitely low blood nitrogen figures.

FOERSTER, Milwaukee.

SUR UN INCIDENT DU AU CYANIDE MERCURE INJECTION INTRAVEINUSE. LÉON RENARD, Presse méd. **27**:808 (Dec. 27) 1919.

Renard calls attention to what he believes to be a new observation in the use of cyanid of mercury intravenously. He states that in his experience one out of each three patients injected notices an odor of bitter almonds. He believes that the patient should be warned before treatment that he may notice such an odor, and that the cyanid element in the drug is not negligible and may explain some of the deaths following injection of cyanid of mercury.

SENEAR, Chicago.

THE INCIDENCE OF SYPHILIS AMONG WHITE AND COLORED TROOPS AS INDICATED BY AN ANALYTICAL STUDY OF THE WASSERMANN RESULTS IN OVER TEN THOUSAND CASES. WILLIAM LEVIN, J. Lab. & Clin. M. **5**:93 (Nov.) 1919.

Based on the ++ reactions alone there were 10.5 per cent. of syphilitics among the white, and 18.3 per cent. among the colored, soldiers. Considering the + reactions in this series the percentage of syphilitics was 13.8 for the white and 24.1 for the colored soldiers. It is estimated that the same and probably higher percentages of syphilitics exist among the white and colored civilians between the ages of 21 and 31.

LEVIN, New York.

QUELQUES RÉFLEXION SUR LE TRAITMENT DES BUBOUS CHANCRELLEUX FOR LE DRAINAGE FILIFORM. ANDRE FLOQUET, Presse méd. **28**:5 (Jan. 3) 1920.

Floquet asserts that in the treatment of persistent chancroidal bubos the best results are obtained by the use of filiform drainage, if two essentials are observed. First, the drainage should take place from the edge of the infected pocket, at the extreme limit of the infected zone. Second, of almost equal importance is the removing of the horsehair at the proper time, for if left in place too long it may determine fistulous openings.

SENEAR, Chicago.

FURTHER OBSERVATIONS ON THE RELATION OF AORTIC INSUFFICIENCY TO THE WASSERMANN TEST. JULIEN E. BENJAMIN and SIDNEY J. HAVRE, J. Lab. & Clin. M. **5**:47 (Oct. 1919.

Thirty-three cases of aortic insufficiency are reported. No other cardiac disease was clinically present. In only 11 per cent. of these cases was the Wassermann reaction positive as against the higher rates of other writers.

Undisputed histories of rheumatism were obtained in 57 per cent. of the cases. Questionable histories of rheumatism and histories of frequent attacks of tonsillitis were noted in 15 per cent.

LEVIN, New York.

CASE OF INTRAMINE DERMATITIS. A. R. FRASER, Practitioner **104**: 40 (Jan.) 1920.

Fraser describes a case of generalized dermatitis occurring in a syphilitic patient given an injection of intramine (di-ortho-amino-thio-benzene). As the patient developed a similar eruption following an injection of arsphenamin that had been given previously, and later had another attack after an injection of novarsenobillon, he concludes that the patient's skin had a marked susceptibility to the action of drugs, and that he was constitutionally prone to dermatoses. It is possible on the other hand, that he may have had an idiosyncrasy to one particular or radical group, the amino or benzene groups common to these three drugs.

SENEAR, Chicago.

THE "DELAYED NEGATIVE" WASSERMANN REACTION. GUTHRIE MCCONNELL, J. Lab. & Clin. M. **5**:43 (Oct.) 1919.

The author states that in performing the Wassermann tests readings should be taken every fifteen minutes after the hemolytic system has been added and the tubes placed in the incubator or water-bath. By so doing there will be a certain number, about 1 per cent., that will give a so-called "delayed negative" reading. Of these nearly three-fourths will give either a positive or suspicious history in regard to venereal disease.

LEVIN, New York.

A STUDY OF THE CAUSES OF DELAYED UNION AND NON-UNION IN FRACTURES OF THE LONG BONES. WILLIAM LAURENCE ESTES, JR., Ann. Surg. **71**:40 (Jan.) 1920.

In discussing the causes of nonunion of fractures, the author remarks that syphilis may be the cause even in the absence of history and manifestations of the disease. A Wassermann test should be made in all cases in which delayed union is suspected.

Three of the author's sixty-four cases of delayed union had positive Wassermann reactions but there were no apparent manifestations.

TOMLINSON, Omaha.

ON SCHAMBERG'S "PECULIAR PROGRESSIVE PIGMENTARY DISEASE OF THE SKIN." H. G. ADAMSON, Brit. J. Dermat. & Syph. **31**:179 (Oct.-Dec.) 1919.

Adamson, having seen a number of cases of Schamberg's disease, concludes that it may be regarded as an entity, and not a mere pigmentation from vascular congestion associated with long standing and with varicose veins. He reviews the seven published cases, and adds the findings in five cases seen by himself. He presents the outstanding features in the clinical and histologic picture in each case.

SENEAR, Chicago.

CULTURAL STUDIES ON A CASE OF SPRUE; PRELIMINARY NOTE. WADE W. OLIVER, J. A. M. A. **74**:27 (Jan. 3) 1920.

A yeast, *Monilia* of Ashford, was recovered from the stool, tongue, sputum and a tooth abscess of a case of sprue.

A guinea-pig died after an intraperitoneal injection of some of the culture, and the yeast, mixed with *Staphylococcus aureus,* was found in the liver and gallbladder.

LEVIN, New York.

A CASE OF LUPUS ERYTHEMATOSUS ASSOCIATED WITH STREPTOCOCCAL INFECTION OF THE TONSILS. H. W. BARBER, Brit. J. Dermat. & Syph. **31**:186 (Oct.-Dec.) 1919.

Barber has investigated a number of cases of lupus erythematosus, and concludes that, in some instances at any rate, the disease is due to the absorption of the toxins of a *Streptococcus longus* with tonsillar foci. He gives detailed observations on the course of a case seen by him in which this organism was apparently the cause of the disease.

SENEAR, Chicago.

Society Transactions

NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILIS

Regular Meeting, Nov. 5, 1919

JOHN E. LANE, M.D., *Chairman*

LUPUS VULGARIS (SHOWING RESULT OF KROMAYER LIGHT TREATMENT). Presented by DR. J. J. ROTHWELL.

A white boy, from the service of Dr. Trimble at the Skin and Cancer Hospital, aged 13, of Dutch parentage, presented on the right side of the neck from the ramus of the jaw to the clavicle, dark pigmentation with areas of white skin. The patient had previously been presented at the meeting of November, 1918, when apple-jelly nodules were readily apparent. Kromayer unfiltered compression treatment had been continued at three or four week intervals since that time. Each new outbreak of nodules subjected to the treatment had succumbed, and the cosmetic effect was fully as satisfactory, if not more so, than was to be secured from any other plan of treatment. The scarring was of a soft, smooth character, altogether different from the usual scar of the affection. In this case, apparently the recurrences were amenable to this plan of treatment.

ANNULAR LICHEN PLANUS. Presented by DR. J. J. ROTHWELL.

A white man, from the service of Dr. Trimble at the Skin and Cancer Hospital, born in the United States, aged 38, presented numbers of variously sized annular lesions with cleared centers and slightly infiltrated thin borders, which were papular, purplish in hue, flat at the summits, and had previously been the source of great pruritus. The eruption was of several months' duration and at first had not been annular. There was also a history of a previous attack of lichen planus.

DISCUSSION

DR. W. J. HIGHMAN said that this was a most interesting case of lichen planus annularis, because the center of the lesions was atrophied and represented the morpheiform type, if not the true lichen sclerosus.

DR. J. J. ROTHWELL asked whether lichen planus sclerosus did not always produce white lesions.

DR. W. J. HIGHMAN replied in the affirmative, but said there was no reason why the blanching process could not require four years for completion. This patient had two lesions that were distinctly whiter than the rest of the skin, wih underlying vessels showing through, as seen in scleroderma or acrodermatitis atrophicans.

ANNULAR LICHEN PLANUS. Presented by Drs. L. Chargin and E. W. Abramowitz.

William K., aged 48, born in Switzerland and having lived thirty years in this country, a butcher, married, and the father of seven children—all alive and well—whose wife had had one miscarriage, had always been in good health with the exception of having typhoid fever twenty-one years ago. About twenty-five years ago he had a chancre. He received internal treatment for about three months, and had never complained of illness since. The present trouble began about eighteen years ago, when an eruption appeared on his arms and forearms. This lasted about one month and left very little staining. There was little itching. Since then, he had had several relapses. The present eruption was of about three months' duration and was located on the backs of the fingers, on the hands, wrists and dorsa of the feet. The affection consisted of pinhead sized papules, violaceous in color, arranged in a circinate and annular manner and of the size of a five-cent piece. There were a few isolated papules. Umbilication and plugging was a feature. The older lesions were on the dorsa of the feet, showed clear centers and scaly edges, and the circles varied from the size of a five-cent piece to that of a quarter. There were lichen planus lesions on the tongue, leukoplakia at the angles of the mouth and Fordyce's disease on the mucous membranes of the cheeks at the dental closures. A Wassermann test had been made but a report had not yet been received.

ADENOMA SEBACEUM. Presented by Drs. I. Rosen and Wolf.

A. W., aged 11, presented himself at the Mount Sinai clinic on Nov. 1, 1919. He was the second of four children and the only one affected. The parents were normal. The face presented numerous small nodular growths varying in size from a pinhead to a split-pea, and they were situated on each side of the nose and on the cheeks. Their color varied from red to brownish-yellow, and numerous telangiectases were present coursing between the nodules. The condition had been present since birth without much damage. Mentally, the patient was deficient, probably measuring up to 5 or 6 years on the Binet scale.

DISCUSSION

Dr. Wolf said that the case was especially interesting because the patient showed other congenital malformations of the skin in addition to malformations of internal organs. He had several pea-sized growths on the scalp and two on the right buttock which were probably molloscum fibrosum lesions. The right kidney had been removed on account of a fibrosarcoma.

Dr. H. Goldenberg said that Dr. Lapowski's statement that this case was unique was not correct. The syndrome of adenoma sebaceum with various other manifestations, such as fibroma molluscum, intellectual defects, epilepsy, the so-called tuberous and cerebral sclerosis of Bourneville and kidney tumor, was well known and had been observed by a number of authors. This boy was admitted to the surgical service of Mount Sinai Hospital with many disturbances, and the presence of adenoma sebaceum in combination with the other symptoms mentioned prompted the speaker to make the probable diagnosis of a congenital kidney tumor of the Wilms type, prior to the operation.

Dr. B. Lapowski referred to a most interesting case described by an Italian in the *Annales di dermatologie et syphiligraphie* of 1914-1915, which corre-

sponded very closely with this one in the mental and clinical symptoms. At necropsy peculiar tumors were discovered—different kinds in the heart and kidney—not sarcoma. The patient was a young man between 24 and 29 years. It would be interesting to read that report in connection with this case. The syndrome, the deficiency of intellect, the epilepsy, molluscum fibrosum, etc., were very well known and had been described by various authors but this was the only case he knew of in which the necropsy findings had been reported. Changes in the suprarenal glands had also been found. Dr. Lapowski suggested treatment with suprarenal gland extract.

Dr. W. J. Highman expressed the desire to have some information as to what practical result might be expected on these tumors from the administration of suprarenal extract, a drug that contracted the vessels.

Dr. Wolf said that if the case should go to necropsy it would be a very interesting second case to report. At present, however, they proposed to put the patient on endocrine treatment, and if any improvement resulted he would be presented again.

TUBERCULOSIS VERRUCOSA CUTIS. Presented by Dr. P. E. Bechet.

M. S., a male, aged 51, from Dr. Trimble's service at the University and Bellevue Clinic, stated that he was operated on for fistula-in-ano on April 4, 1917. A second operation was performed Dec. 25, 1918. In March, 1919, he first noticed the eruption. The patient stated that there was a rapid increase in the eruption during the three months previous to presentation. The eruption was limited to the anal region and consisted of a large verrucous, papillomatous, hypertrophied patch with a seropurulent fluid in the interstices of the papillary projections. At the perineum, there was some tendency to indolent, undermined ulceration. There was marked surrounding infiltration. A biopsy demonstrated the presence of "giant cells" with homogeneous centers and peripherally arranged nuclei.

CARCINOMA IN A SYPHILITIC PATIENT. Presented by Dr. B. Lapowski.

J. B., a man, aged 40, had been married for ten years, and had one child, a girl, living. Eighteen years ago he had an ulcus durum, with secondaries, and was treated with injections for one year. Eleven years ago he had a right palmar syphilid and received mixed treatment for six months. Two years ago he had leukoplakia of the mouth. The present trouble started four months ago, and he received two intravenous injections of some drug.

Three months ago he was sent to the clinic with (1) a tumor occupying two-thirds of the inner surface of the right cheek, a part of the tumor protruding from the right corner of the mouth; (2) leukoplakia on the upper lip, cheeks and tongue. July 29 the Wassermann reaction was ++++. He was treated with calomel injections (22/7, 30/7, 6/8, 19/8, 4/9) and rubbings, 20 G., followed by great improvement. The patient could open his mouth and the tumor flattened. Salivation increased, however, and the tumor started to enlarge, spreading to the lower lip, and the portion which was originally protruding increased in size and rapid necrosis followed.

Then the patient received intravenous injections of arsphenamin (16/10, 20/10) and neo-arsphenamin (1/10, 3/10, 3/11); the Wassermann reaction was 23/10 ++++. He was also treated locally with iodoform gauze and gargle.

Ten days ago when the destruction was rapidly progressing, he was kept in bed for a week and was given Decoctum Zittmanni, but there was no improvement.

Dr. B. Lapowski said that by reading the literature and descriptions of such cases it would be seen that some men (and he had belonged to that class in the past) imagined that by treating such cases specifically in the beginning they improved and were better able to stand an operation in case the syphilis was combined with epithelioma; but he regretted it afterward on account of the rapid destruction resulting from salivation. From now on, however, he would never again treat any epithelioma of the mouth on a specific basis, with either mercury, calomel, or rubbings—only with arsphenamin.

DISCUSSION

Dr. A. Rostenberg said that he had seen the patient at a clinic in June, and he then had a lesion the size of a silver dollar on the buccal mucous membrane which was thought to be an epithelioma on a gummatous base, and specific treatment was advised for a short while only, with the idea that if improvement did not result immediately it should be treated as a carcinoma. It would seem that specific treatment had been given entirely too long and that the patient should have been treated surgically much sooner.

Dr. H. Goldenberg said that his impression when he saw the case with Dr. Lapowski two weeks before was that Dr. Lapowski considered the lesion a gumma and expected to show the case again, cured by antisyphilitic treatment. He was very glad to see that the doctor had changed his mind in regard to the diagnosis, as Dr. Goldenberg and his assistants who saw the case through the kindness of Dr. Lapowski were all of the opinion that it was a carcinoma.

Dr. S. Pollitzer said that of course all dermatologists had seen cases of necrosis of an epithelioma which had run a very rapid course, quite independently of antispecific treatment They were seen long before the days of salvarsan and would probably be seen as long as the world exists or until there is found some means of recognizing epithelioma definitely and positively at its first appearance. There is only one way of recognizing epithelioma, and this method should be practiced in every doubtful case—biopsy should be performed followed by immediate operation if malignant degeneration was found. Unfortunately, cases of epithelioma occurring in syphilitics were the source of a great many mistakes, and it was difficult to see how they could be avoided unless one always carried in mind the possibility of epithelioma. These cases are the worst forms of epithelioma that we have to deal with and they are always extremely malignant.

He recalled a case he had seen many years ago in which a minute ulceration, started by a jagged tooth, had resulted in a perforation of the cheek in three weeks, followed by death from general carcinosis within a month. Any one might fail to recognize an epithelioma in a syphilitic when it first appeared, nor was it probable that the course this case had followed was influenced by the antisyphilitic treatment.

Dr. Lane said that his feeling about cases of doubtful gumma or carcinoma of the mouth was that if not influenced most decidedly by ten days of antisyphilitic treatment they should be sent to a surgeon for biopsy, and if carcinoma were found operation should be performed at the same time.

As to the bad influence of antisyphilitic treatment on carcinoma of the mouth on a syphilitic base, there was of course danger of injury if mercury was pushed to the point of salivation and stomatitis, which was easily brought about in such cases. If used with arsphenamin for a week or ten days for diagnosis, this was unlikely to arise. He had seen no unfavorable results from the use of arsphenamin. As to there being a contra-indication for the use of the roentgen rays in such cases, he thought the contrary to be the case. They were indicated after operation, and were also indicated in inoperable cases, in which they frequently gave great relief.

Dr. B. Lapowski said when he first saw the case on July 9, it was in just about the condition as presented—inoperable. The patient having a Wassermann positive on two examinations and giving a clear history of syphilis. there was no reason why he should not be treated antispecifically, but with the greatest care; calomel injections to be avoided, even rubbings to be very guardedly given, owing to the danger of salivation. In such cases arsphenamin was the remedy.

EPITHELIOMA OF THE LIP. Presented by Dr. J. J. Rothwell.

A white man, aged 24, an Italian, from the service of Dr. Trimble at the Skin and Cancer Hospital, presented on the right side of the upper lip a crusted lesion about one-half inch in diameter which, when inspected at the time of his first visit, seemed to possess a very fine rolled border, such as epitheliomas usually present, and was crusted. The condition had been present for twelve years and was not accompanied by subjective symptoms. Under salicylic acid salve the crusting had disappeared, and the border seemed to be less epitheliomatous in appearance. The Wassermann reaction was negative. According to the history, the condition had not been constant, and recently it had suggested an inactive sycosis.

DISCUSSION

Dr. W. J. Highman said that he had not been able to see the condition very well with the light available, but he had rather thought the diagnosis of epithelioma likely to be correct. It had occurred to him, however, that the patient might have an early lupus erythematosus, for the scar suggested that type of lesion. A condition that had lasted so long would seem to present more evidence of ulceration than was visible tonight, and there might be some doubt as to its being an epithelioma, but the possibility of lupus erythematosus ought to be definitely excluded, and another presentation of the case was very desirable.

Dr. J. J. Rothwell said he would try to present the patient again.

KAPOSI'S SARCOMA. Presented by Dr. W. B. Trimble.

A white man, aged 64, a Russian, from the New York Skin and Cancer Hospital, showed involvement of both legs with edematous infiltration from the knees down. The left leg was studded with numerous small warty excrescences, small horny plaques, and on the dorsum of the foot (covering considerable surface of the region) purplish discoloration. The condition had lasted six months and was unaccompanied with pain. The Wassermann reaction was negative. The patient was receiving arsenic internally.

DISCUSSION

DR. P. E. BECHET remarked that almost every case of Kaposi's sarcoma which he had observed, either at the dispensaries or at clinical meetings, occurred among Russian or Polish Jews. He would like to know how this fact could be explained.

DR. H. GOLDENBERG, replying to Dr. Bechet, said that most of the cases reported in literature have been observed in Italy. He referred to an article of Dalla Favera in the *Archiv für Dermatologie* some years ago (1911, Vol. 4). Dalla Favera states that in over one hundred cases reported by Italian authors, not a single case was found in a Jew, a fact which was corroborated by Professor De Amicis, who in 1897 reported fifty cases under his observation.

DR. WOLF said that he recalled two patients with Kaposi's sarcoma who were natives of Hungary; one was a professional man who had been in this country twelve years, though the disease developed only three years ago. The other patient was an Hungarian woman.

PRURIGO LYMPHATICA. Presented by DR. L. CHARGIN.

T. B., a laborer, aged 46, and married, had an affliction of about two years' duration which began on the legs, and within a period of from five to six months spread to the rest of the body. The sites involved were: the posterior aspect of the neck; both sides of the back—the middle of the back being strikingly free—the buttocks, which were markedly involved; both aspects of the legs—where there were a great many lesions; the dorsal surfaces of the feet; the abdomen, on which there were a few isolated patches; the anus, especially on the extensor surfaces; and scattered lesions on the dorsal surfaces of the hands. The scalp, face, palms of the hands and soles of the feet were quite free from eruption. The affection consisted for the most part of closely crowded pinhead to pea sized papules and nodular areas of infiltrations located on a somewhat erythematous and mostly infiltrated skin. Some of the lesions were quite superficial, but the majority were deeply situated. The margin of the eruption, especially on the back, was sharply outlined. A large number of the individual nodules showed a central atrophic area, and in certain areas, as on the elbows, the dermatosis assumed the appearance of a squamous eczema. The general aspect of the eruption was strikingly "prurigo"-like in character. The surface of the skin was dry. There were numerous scattered small pustules (secondary infection).

The mucous membranes showed leukoplakia at the mouth corners, probably the remnant of an old syphilitic condition. The color of the eruption was brownish or reddish-brown, the more recent lesions being red, whereas the older ones were of the various shades of brown. Everywhere on the body there was considerable evidence of scratching. Subjectively there was marked itching, especially on the lower extremities.

The physical examination showed the heart and lungs to be negative, the liver not enlarged, the spleen palpable. There were no glandular masses felt in the abdomen. The lymphatic glands were enlarged, particularly those of the groin, which were quite large and in a chain. A blood Wassermann test was negative. The urine contained a heavy trace of albumin, but no sugar.

Several blood examinations showed an average leukocytosis of 23,000 white cells with a differential count varying little from the following: Polymorpho-

nuclears, 48 per cent.; large lymphocytes, 2 per cent.; small lymphocytes, 9 per cent.; large mononuclears, 4 per cent.; eosinophils, 37 per cent. An occasional myelocyte, neutrophilic and eosinophilic, was observed.

The case was presented as a counterpart of the disease described as prurigo lymphatica, but Dr. Chargin had not had sufficient time to study the patient from the etiologic standpoint. A section of the skin had been taken and studied by Dr. Highman, who would discuss the pathology.

DISCUSSION

DR. W. J. HIGHMAN said that under the microscope the case presented the characteristics of that group of diseases roughly classified as leukemias of the skin. Infiltrations were seen throughout the corium—chiefly localized about the vessels— and dilated lymphatics. The cells were all alike in contour, shape and character. It was difficult to classify them, but if one could visualize a group of frog's eggs on a small scale it would give a fairly good idea of them. There was a rich cytoplasm. The cells seemed of the lymphatic type and it was inferred that they could originate either from the blood itself or by multiplication in situ, from the endothelia of the lymphatics. It was not an inflammatory condition, but was neoplastic in the widest sense, and unless it was endothelioma it corresponded with leukemia. There were no eosinophils seen in the section, and that was a point on which both mycosis and Hodgkin's disease might be excluded.

Regarded superficially, the disease clinically suggested Duhring's disease, but on closer analysis it was seen not to be that for the lesions were solid nodules or papules, and not blebs. Dr. Lustgarten used to teach that many of these leukemic conditions closely resembled Duhring's disease superficially, but in no other characteristics. If one wished to call it prurigo lymphatica, that would serve very well to conceal ignorance. Microscopically, it belonged in the group in which Dr. Chargin had placed it.

DR. L. CHARGIN said that bearing on the etiology was the enlarged spleen and enlargement of the lymph glands, especially noticeable in the inguinal region. The patient's general state was quite normal.

DR. S. POLLITZER added a word on the subject of the name. The condition had already been very well described by Debrevilh of Bordeaux—prurigo lymphadénique, leukemic prurigo.

DR. H. GOLDENBERG said that the name prurigo lymphatica had been coined to show the resemblance the individual lesions bore to the prurigo of Hebra. It could not be confounded with prurigo Hebra, which begins in early youth and is principally located on the extensor surfaces of the extremities. Prurigo lymphatica was a so-called "lymph-adenide" (Arndt), and was observable in leukemia, pseudoleukemia, lympho-sarcomatosis and mycosis fungoides.

DR. L. CHARGIN said that the term prurigo lymphatica was not given to conditions that were solely leukemic in nature, but constituted a type of dermatosis observed in the so-called leukemids, which may have leukemia as the underlying cause though a variety of other conditions might also cause it—such as lymphosarcoma, tuberculosis of the lymph glands, or hypertrophic gland conditions observed in malaria. It was the particular form which resembled the prurigo of Hebra to which the term prurigo lymphatica had been given. E. Wagner was the first to describe it under that name.

DR. B. LAPOWSKI said that rather than call it prurigo lymphatica he would call it plainly leukemia. The lesions developed in spite of the pruritus.

EPITHELIOMA OF THE LIP. Presented by Dr. M. Parounagian.

Mr. W., aged 56, a peddler by occupation, was born in Austria. According to his statement, the duration of the condition was about four or five weeks. There were two lesions on the vermilion border of the lower lip, on the right side, which bled easily. The edges were slightly pearly. The patient was not a smoker, gave no venereal history, and his Wassermann reaction was negative. There was no glandular involvement.

DISCUSSION

Dr. F. Wise agreed with the diagnosis.

PSORIASIS (PALM, BODY). Presented by Dr. B. Lapowski.

The patient was a man aged 30, a presser by occupation. Both palms, especially the right, showed two large psoriatic patches; the left was less affected. There were also lesions on the body.

ANNULAR PSORIASIS. Presented by Dr. B. Lapowski.

A. S., a messenger, aged 22, had on the body many serpiginous patches of psoriasis. On the tongue also there were two distinct bean-sized red patches, the color of the patches being clearly distinguished from the color of the rest of the tongue. In daylight the papillae of the tongue had a whitish, mother-of-pearl color.

SYPHILIS PALMARIS AND LEUCOPLAKIA OF TONGUE AND CHEEKS. Presented by Dr. B. Lapowski.

L. W., aged 36, a barber, had twenty-two years ago a slight traumatic abrasion on the penis. He was treated at the time in a hospital with rubbings for three weeks. He had had no treatment since. Ten years ago the leukoplakia of the tongue started. Three months ago a palmar syphilid developed, papulo-tubercular. On the right arm were two scars, remnants of previous lesions. The Wassermann reaction was 7/10 ++++.

MOLLER'S GLOSSITIS. Presented by Dr. A. Rostenberg.

Mrs. K., aged 58, and the mother of seven healthy children, had been under treatment in Dr. Rosen's service at Mount Sinai Hospital. Her family history had no significance. She had never had any serious sickness and had never suffered from stomach or intestinal trouble with the exception of moderate constipation. The condition for which she was being treated started about two years before, when the patient noticed that while chewing her food she would have a burning pain on her tongue, which was most pronounced when eating spicy food or hot substances, or when taking hot liquids. The condition was always present but was more exaggerated at times. On examination the tongue appeared of normal size. On the left side there was an oval shaped area about an inch in diameter on which the epithelium appeared to be excoriated; the surface was glossy and reddened. There was a complete absence of the filiform papilli. The area was extremely sensitive to the influence of hot and sharp substances. The rest of the tongue seemed normal except for a small irregular area on the right side which appeared to be hypertrophied, was grayish white in color and resembled a patch of leukoplakia. The buccal mucosa and the pharynx were normal. The Wassermann reaction, taken on two different occasions, was negative.

Dr. Rostenberg said that on looking over the literature he was surprised at the scarcity of these cases. The leading American textbooks did not mention them at all. In the *Journal of Cutaneous Diseases* of 1915 he had found an article by Dr. Harris of Chicago, who described twenty-six cases. The case presented corresponded very well with those described by him.

LUPUS VULGARIS (FOLLICULAR DISSEMINATED TYPE). Presented by Dr. Howard Fox.

This case was previously presented at a meeting of the New York Dermatological Society, Oct. 28, 1919.

Dr. A. J. Gilmour said the condition probably had a fibromatous basis. The lesions were under the skin and the skin was freely movable over the tumor and the tumor was freely movable over the soft parts.

Dr. F. Wise said he had seen the patient on several occasions and felt that a definite diagnosis of such a condition was out of the question without a biopsy.

Dr. S. Pollitzer said there was nothing in the case that suggested syphilis to him. A gummatous infiltration lasting eight years was out of the question; it would have broken down long ago, or if treated, it would have undergone resolution. The large masses were made of small—smaller than pea-sized—hard nodules, the conglomeration of which made up the hard mass under the skin. There seemed little doubt that the case was xanthoma with a secondary amount of secondary fibrosis. It had not the yellow color for the deep pigment of the woman's skin would not permit a yellow color to show through. The history of the case, the appearance of the lesions and their location, all spoke for xanthoma. The xanthoma deposits may occur in the hypoderm as well as in the cutis itself. There seemed little doubt that it was a xanthoma.

Dr. H. Fox thought the most probable diagnosis, when he first saw the case, was xanthoma. The Wassermann test being positive, however, made him feel that a gumma should be considered. The case had been presented previously at another dermatological society where the majority seemed to consider it syphilis. The histologic examination had not been completed. Dr. Fox asked whether Dr. Pollitzer had ever seen a case of xanthoma tuberosum in a negro, and was answered in the negative.

Dr. P. E. Bechét said he had presented a case with a mixture of such lesions four or five years before.

Dr. A. J. Gilmour asked whether the lesions were connected with the skin or whether the skin was freely movable over the tumor. Where the skin seems to be involved it is probably due to secondary inflammation, but most of these lesions have the skin freely movable over the tumor.

Dr. P. E. Bechet replied that the skin was freely movable on the fibroma and over the xanthoma.

FILARIAL ELEPHANTIASIS. Presented by Dr. Louis T. Wright for Dr. Howard Fox.

A. P., a colored woman, aged 34, had a negative family history. She was born in the West Indies and had lived in the United States for twelve years. She had been married for eight years and was the mother of four children, the youngest being 6 weeks old. She had had one miscarriage in 1913. The condition for which she was presented began in 1912, with an attack of chyluria

which persisted for several months and then cleared up, only to reappear the following year, at which time it persisted for a few months and then disappeared. It had not returned since.

In 1914 the patient was in the Post-Graduate Hospital when nocturnal examinations of her blood were made and she was told that filaria were found. In August, 1918, her right leg began to swell, and had remained in this swollen condition, being much larger than the left. The leg was painless, but she noticed that the swelling was much greater in the mornings on arising than at night on going to bed. Otherwise, her health had been normal in every respect.

She came under observation for the first time, Oct. 22, 1919. at which time her physical condition was normal but for the enlarged condition of her right leg. An examination of her blood at 11 p. m. on Oct. 23, 1919, showed several embryo filariae. The circumference of the right leg as compared with the left was:

	Right Leg Inches	Left Leg Inches
Ankle	13½	11
Calf	15½	13½
Knee	15½	14½
Thigh	16¼	16

These measurements were made Oct. 22, 1919, at which time an eosinophilia of 8 per cent. was found. About 2 inches above the internal condyle, a nodule about the size of a large pea (half an inch in diameter) was felt. The nodule was not tender, but was hard and presumably was one of the points of obstruction.

Oct. 28, 1919, 0.3 gm. of arsphenamin was administered intravenously.

MORPHEA. Presented by Dr. J. J. Rothwell.

A white woman from the service of Dr. Trimble at the Skin and Cancer Hospital, aged 39, born in the United States, presented on the right side of the neck two whitish areas of stiffened skin about one inch by half an inch in dimension, at the borders of which were very narrow violaceous limits. The condition was not accompanied by any subjective symptoms and was of four years' duration. The Wassermann reaction was negative.

The patient had had two or three Kromayer compression treatments and the lesions—both to the patient and to the observer—were apparently more supple and soft than they were previous to the treatments.

DISCUSSION

Dr. W. J. Highman asked Dr. Rothwell on what rational grounds the Kromayer lamp was employed in treating an atrophy, essentially a scarring process.

PAPULONECROTIC TUBERCULID. Presented by Dr. L. Chargin.

A woman, aged 37, married, presented an eruption, especially marked on the extensor surfaces of the forearms and legs with numerous scars of former lesions. The lesions exhibited were in various stages of evolution and involution, and the active lesions presented were of at least several months' duration. The onset of the condition occurred more than twenty years ago. The patient was likewise the subject of a tertiary syphilis, having presented herself three months before with a gumma in the middle of the tongue.

Of interest in connection with the case was the fact that although the woman had had several arsphenamin injections during the past three months, which had completely cleared up the gumma, there had been no effect on the tuberculid. This was mentioned apropos of the recent statement of Stokes who had observed marked improvement in tuberculids following arsphenamin treatment.

Dr. B. Lapowski asked how the diagnosis of papulonecrotic tuberculid was made, and on being told that it was only a clinical diagnosis, replied that he did not see how in a syphilitic case one could make a differential clinical diagnosis and call one lesion a gumma and the other a papulonecrotic syphilid.

Dr. H. Goldenberg asked whether Dr. Lapowski admitted the possibility of a patient's having a gumma and a carcinoma.

Dr. B. Lapowski repeated that he would like to know how one could make a differential diagnosis in the presence of a gumma.

Dr. O. L. A. Levin said he had first seen the patient six months before, at which time she presented an ulcer on the dorsum of the tongue which was deeply excavated and measured 2 by 3 inches. Notwithstanding two negative Wassermann reactions, she was given antisyphilitic treatment and the ulcer began to close in. She was next seen at the Mount Sinai Hospital Dispensary, after she had received several injections of arsphenamin and mercury in the hospital, and the ulcer had diminished in size. At the hospital the Wassermann tests were again negative. He had not seen her for more than three weeks, and tonight for the first time he had seen the ulcer healed. While under his observation, the papulonecrotic tuberculids were not present.

Dr. Howard Fox thought that whether or not the patient had previously suffered from syphilis, the diagnosis of a clean-cut eruption like a papulonecrotic tuberculid could be made on clinical grounds. This eruption was evidently not a nodular syphilid as it was symmetrical and showed no grouping or circinate configuration characteristic of the late syphilids.

Dr. L. Chargin asked Dr. Lapowski, assuming that this was a syphilitic condition, would it not have disappeared under the antisyphilitic treatment which she received as did the gumma.

Dr. B. Lapowski replied that that was the point. It did not disappear under treatment.

Dr. Lane said that the lesions appeared to him to be typical papulonecrotic tuberculids. He did not know of any form of tertiary syphilis resembling them. The gumma had completely healed under antisyphilitic treatment, and these lesions had not been at all influenced. Everything indicated that the diagnosis of papulonecrotic tuberculid in a syphilitic was the correct one.

NEUROFIBROMA. Presented by Dr. J. J. Rothwell.

A white woman, aged 38, born in Russia, from the service of Dr. Trimble at the Skin and Cancer Hospital, presented on the front of the right leg, midway between the ankle and the knee, a dimpled, slightly pigmented (reddish-brown), pea-sized nodule which had been present five years and was both spontaneously painful and painful to pressure. Over the posterior deltoid region of the right arm were two similar nodules, painful only on manipulation. On the left leg there was a similar lesion only one year old. The Wassermann reaction was negative.

DISCUSSION

Dr. W. J. Highman said it was a most interesting case. He did not think, however, that it was a neurofibroma. Tumors of this sort, painful and tender, suggested myoma. Further evidence of the possibility of myoma was the color of the lesions.

Dr. J. J. Rothwell said that if a biopsy were made they would take out all three lesions.

SYPHILIS VERRUCO-TUBERCULOSA. Presented by Dr. B. Lapowski.

Mrs. F. D., a widow, aged 50, had been married for thirty years, had had eight pregnancies, and had two children living. One died when 7 years of age, another two days after birth, and one pregnancy resulted in a stillbirth. She had had three abortions, the last eleven years ago. She gave a suspicious history of syphilis about twenty years ago. She was treated at that time with injections in the buttocks; this treament was followed by local abscesses. During the past sixteen years lesions had appeared and disappeared on the right buttock leaving net-like scars. On both forearms were scars of previous lesions. The lesions presented on the right buttock were of eight months' duration. The report of the Wassermann test had not been received. The blood sent to the board of health contained "a substance which prevented testing." Dr. Lapowski said that he had presented the case expecting that some would call it tuberculosis verrucosa. The important point was that the scars on the buttocks and elsewhere would make the diagnosis syphilis. He wished to hear the opinion of the other physicians.

Dr. Howard Fox thought the case was probably one of tuberculosis of the skin. He felt that after all it was a waste of time to spend much time in clinical speculation in such a case which might either be syphilis, tuberculosis or blastomycosis. One injection of arsphenamin would settle the question as to whether it was syphilis or tuberculosis, and he asked Dr. Lapowski to give the patient antisyphilitc treatment (using nothing locally) and present her at the next meeting.

Dr. W. Wise thought that all the lesions were tuberculous, and that there was no syphilis manifested in any portion of the diseased area.

Dr. W. J. Highman said that so dogmatic a statement as that made by Dr. Wise was unacceptable. The lesions on the buttocks showed no clinical evidence leading to any conclusion except Dr. Lapowski's. There were no tubercles present. The scar was not that of tuberculosis, nor would there have been seventeen years of intermittent progress in tuberculosis.

Dr. H. Goldenberg said that he agreed with Dr. Lapowski. It certainly looked like a case of syphilis.

Dr. S. Pollitzer agreed with the diagnosis of syphilis as against tuberculosis. The absence of the little miliary abscesses usually found with tuberculosis cutis verrucosa or papillomatosa was against the latter diagnosis. He hoped that Dr. Lapowski would not record it as a case of syphilis tuberculosa verrucosa.

Dr. Howard Fox asked that Dr. Lapowski treat the case with antisyphilitic remedies and present the patient again a month later.

PELLAGRA. Presented by Dr. B. Lapowski.

A girl aged 24, who was born and lived all her life in New York, was first seen five years ago at the Good Samaritan Dispensary, at which time she

presented very much the same appearance seen now, except that she was then more edematous. She showed on the face a butterfly arrangement of an erythema squamosum. On both dorsal aspects of the hands, including the third and second phalanges of the fingers, was a dry erythema. She gave a history of constipation and diarrhea, vomiting, malaise and melancholia. She was thin, emaciated and the skin was thin, dry, and cold. The patches on the face and hands were sharply defined, but not infiltrated. The tongue showed nothing characteristic.

ACRO-ASPHYXIA. Presented by Dr. F. Wise.

Dora D., aged 36, was born in Roumania and had been eighteen years in the United States. She was married and had three living children; she had had also seven miscarriages. The duration of the trouble for which she was presented was five years. The nails on the toes and then on the fingers became curved and brittle. For the past two years her fingers had felt cold with slight pain at the tips—not worse in cold weather. She stated that white spots on the palmar aspects of the fingers appeared in the mornings and disappeared toward evening. There was marked ischemia of some of the fingers and some cyanosis of the distal phalanges. The Wassermann reaction was negative.

Dr. S. Pollitzer said that it suggested a case of sclerodactylia. He had tried to elicit a history of dead fingers, which is usually found in these cases of acro-asphyxia, but the patient said that she had never had that condition. The tips of the fingers presented the appearance of scleroderma or sclerodactylia. It was possible that it was the early stage of the latter condition.

ADENOMA SEBACEUM. Presented by Dr. W. B. Trimble.

A 11 year old girl of Russian parentage, from the Skin and Cancer Hospital, was previously presented at the meeting of November, 1918, after five treatments with unfiltered Kromayer compression. The treatments were given at intervals of three or four weeks, regulated by the amount of reaction following the preceding treatment. The mental condition of the girl was apparently not below normal for one of her age. She was presented in order to show the beneficial result of the treatment.

Dr. B. Lapowski referred to a most interesting case described by an Italian in the French *Annals of Dermatology* of 1914-1915, which corresponded very closely with this one in the mental and clinical symptoms. At necropsy peculiar symptoms were discovered—different ones in the heart and kidney—not a sarcoma. The patient was a young man between 24 and 29 years. It would be interesting to read that report in connection with this case. He then suggested treatment with suprarenal gland extract.

DACTYLITIS SYPHILITICA. Presented by Dr. B. Lapowski.

E. K., aged 3, had been presented before the Section twice previously, the first time in October, 1918. At that time the diagnosis was questioned and tuberculosis was suggested. At the second presentation, several months later, after antispecific treatment (inunctions and potassium) the patient was greatly improved and the diagnosis of syphilis was again questioned and tuberculosis again suggested, owing to the presence of a supposed sinus.

Roentgen-ray photographs of the case were presented, taken before and after treatment, and it was claimed that the original diagnosis was proved by the treatment and the roentgenograms.

NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILIS

Regular Meeting, Dec. 2, 1919.

JOHN E. LANE, M.D., *Chairman*

CONGENITAL SYPHILIS: LANTERN SLIDE DEMONSTRATION.

Presented by DR. J. FRANK FRASER.

DR. FRASER demonstrated the gross and microscopic appearances in the skin and internal organs of a child which had died of congenital syphilis a few moments after birth. Spirochaetae pallidae were demonstrated in the meninges, but repeated examinations for the presence of the parasites in the other organs gave negative results. As the postmortem examination was not made until thirty-six hours after death, it was suggested that the organisms may have been destroyed by autolysis. The Wassermann reaction in the mother was positive and the question of the transmission of the disease appeared to be solely placental.*

DISCUSSION

DR. S. POLLITZER said that the subject was too large to discuss in all its phases, but he wished to refer to one or two points; first, to the disappearance of the spirochetes within an hour and a half after death, or birth if the child was born dead. He was greatly surprised to hear that statement. It seemed extraordinary because in that very short space of time the body ordinarily had not even time to cool noticeably and practically no postmortem changes were appreciable. It therefore seemed very surprising to find that an autolytic process should have proceeded so rapidly as to destroy spirochetes. It was the more surprising because cases with liver, lungs and other organs simply loaded with spirochetes were often shown, and so far as he could recall there had been no mention of the fact that the tissues had been examined immediately after death. He did not question the assertion made by Dr. Fraser, but he wished to express his surprise that in the extraordinarily short space of time an autolytic process should have proceeded to the extent of destroying the spirochetes. The subject ought to be investigated further from that point of view.

As to the appearance of the first lesions in the syphilitic infant, the difference of opinion on that point—that in some cases they are bullous and in others macular or papular—was readily understood if we bear in mind the fact that we are dealing with a disease that undergoes progressive changes and the lesions present at a given moment depend on the time at which the inspection took place. If infection occurred shortly before birth, no lesions at all might be found; the time might be too short for their development; they would appear later. It should not be forgotten that syphilis in the fetus is the same disease as in the acquired form, with the single difference that the infection is primarily hematogenous. The first lesions that we get are like those of an acquired syphilis after the syphilis has become generalized; the first lesions are those of secondary syphilis; if the child is born with the earliest cutaneous lesions of the disease, they will be macular; if infection took place a

* A full report of this case will appear in an early issue of the ARCHIVES.

few weeks earlier, the lesions will no longer be macular but will have undergone the changes we find in acquired syphilis—some will be macular and some will be papular or bullous. That seemed to explain the differences among authors as to which lesions come first. If the child is infected by a tertiary syphilitic mother, it may be born without any apparent signs of the disease, or it may develop them later in life—in some cases after thirty or forty years.

The only theory that has been proposed to explain the remarkable facts of syphilis congenita tarda is that these infants have gone through their secondary stage either in utero or in the first few weeks after birth and, becoming tertiary syphilitics, develop their lesions at remote periods after infection. No one has seriously considered this an adequate explanation. Several years ago the speaker offered an explanation* of the occurrence of tardy syphilis and also of the remarkable vagaries that have been observed in the incidence of congenital syphilis in a given family—for instance, the fact that one child may be a syphilitic and others healthy or that only one of a pair of twins may be syphilitic. The woman in an active stage of syphilis, with her blood swarming with spirochetes, will necessarily infect the fetus by way of the placenta and give birth to a dead fetus or a living syphilitic child with active lesions of the disease. The woman in the tertiary stage of syphilis only occasionally has a few spirochetes in her blood stream and it is a matter of chance whether or not some of these find their way into the uterine arteries; whence it follows that the tertiary syphilitic may bear healthy and syphilitic children alternately, as a matter of chance, and that one twin alone may be infected. Secondly, when the spirochetes of the tertiary syphilitic mother pass through into the blood of the fetus they do not find a virgin soil in which to flourish. The blood and tissues of the fetus partake of the blood and tissues of the mother; the fetus ab ovo has the qualities of a tertiary syphilitic, and spirochetes entering the circulation of such a fetus do not produce the lesions of a fresh syphilis but those of tertiary syphilis which may be delayed —as we know in acquired syphilis—for many years.

With regard to the mode of transmission, the speaker expressed the opinion that syphilographers generally were entirely in accord with what Dr. Fraser had said. He did not believe that paternal syphilis exists.

Dr. W. J. Highman said that the members of the Section were indebted to Dr. Fraser for his very comprehensive view of congenital syphilis. Very little remained to be said after Dr. Pollitzer's remarks; he had exactly presented every idea the speaker had ever entertained on the subject. The entire matter of congenital syphilis would be much simplified if persons would only realize that the infected placenta was an anatomic chancre. As soon as that fundamental truth was grasped, the truth of what Dr. Pollitzer had said was patent. There was no difference between congenital and acquired syphilis except that the former was acquired in utero, and the individual thus runs through a great variety of manifestations which may or may not be expressed after birth.

Dr. C. M. Williams questioned the point raised by Dr. Pollitzer on the appearance of congenital syphilis in the children of mothers in the tertiary stage. If it were true, as suggested by Dr. Pollitzer, that the tissues of children born of a mother while suffering from tertiary syphilis would show the same reaction to syphilitic infection as those of any tertiary syphilitic, then it followed that all such children, if they showed any syphilis at all, should

*Am. J. Obst. **73**:837 (May) 1916.

show tertiary lesions. He was not aware that such was the case. Also, since an important feature of the reaction of the tissues of a tertiary syphilis was resistance to a fresh infection, then all children born of a mother while suffering from tertiary syphilis should be immune to acquired syphilis, whether congenitally infected or not. He knew of no statistics to support this contention.

Dr. B. Lapowski said that before the era of the Wassermann reaction the question of whether a mother could give birth to a syphilitic child without herself being infected was settled by a clinical examination of the mother. In the absence of any clinical manifestations in the mother, she was considered free from syphilis (Finger), until Matzenauer undertook to examine ten cases on which Finger's statement was based and showed that the examination was not complete, as in nearly all the cases of mothers giving birth to syphilitic children some clinical manifestations were present. Since then the opinion—even before the Wassermann reaction—has been that every mother giving birth to a syphilitic child was suffering from syphilis. The Wassermann reaction tended to support this view.

Dr. L. Chargin referring to Dr. Pollitzer's remarks, inquired how he would explain an active secondary syphilis (macular eruption, mucous patches, etc.) in a child that was the offspring of a mother in the tertiary stage of syphilis.

Dr. S. Pollitzer replied that the fact that the mother presented no symptoms and gave a positive Wassermann reaction was not a proof that she was in the tertiary stage. The only absolute proof of tertiary syphilis was the presence of tertiary lesions. He did not know that a woman with tertiary lesions could give birth to a child with lesions of secondary syphilis; he doubted it. In this connection, it should be remembered that the lesions of the secondary and tertiary periods often overlapped.

Dr. L. Chargin said he had a family under observation bearing on this point. The father had become infected with syphilis about eleven years previously. Soon after infection he received one course (about twenty) of rubbings in Finger's Clinic in Vienna, and about a year later, because of recurrence, six to eight insoluble mercury injections. Two years later he married. During the first year of his married life, his wife gave birth to a premature child which was stillborn. The second pregnancy, one year later, resulted in what appeared to be a healthy child; the third child, born less than three years ago, was brought to the clinic when an infant with active secondary syphilitic manifestations (mucous patches, papular eruption). It seemed reasonable to assume that the mother became infected during her first year of married life and accordingly had had the infection some five years at the time she gave birth to this child. If Dr. Pollitzer's theory were correct, one should not expect to find secondary syphilis in this child, yet the infant showed unmistakable evidence of an early syphilis.

Dr. S. Pollitzer said the facts as presented were insufficient to permit the basing of an opinion. The occurrence of a stillborn child or a miscarriage a year or two after marriage was certainly not proof of syphilis. On the other hand, it had happened in the history of the human race that a woman was infected with syphilis even ten years after her marriage!

Dr. F. Fraser said his remarks in regard to the destruction of the organisms by an autolytic process were simply a reflection of the views of pathologists of wide experience in conducting postmortem examinations in these cases. He did not himself have any views on the question and was unable to explain why in some cases the spirochete could be readily demonstrated and in others they could not.

NEVUS LATERALIS, HYPERKERATOTIC TYPE. Presented by Dr. E. W. Abramowitz.

Leon R., aged 4, born in the United States, was brought to Dr. Fordyce's clinic by his mother who said that she had noticed the lesion on the boy's nose for the last four months. On the left side of the nose, extending from the bridge to the tip, forming an S-shaped line about a half inch wide, were hyperkeratotic scales arranged in linear continuity.

LUPUS VULGARIS. Presented by Dr. M. Scheer.

The patient, C. H., was a woman from Dr. Fordyce's clinic, 54 years of age and married, whose occupation was housework. The peculiarities of the affection in this case were the time of onset of the disease and its distribution. The disease began four years ago and presented the bat-wing distribution so common in lupus erythematosus. The lesions consisted of erythematous and slightly scaly patches and nodules located on both cheeks, nose and upper lip. The histologic examination revealed the condition to be typical lupus vulgaris.

GUMMA OF TONGUE AND EPITHELIOMA. Presented by Dr. B. Lapowski.

Mr. A. F., aged 48, a canvasser, in 1889 had an ulcus penis with secondary manifestations, and was treated by the late Dr. Allen in the Good Samaritan Dispensary with intramuscular injections and internally for about two years, up to 1901. He then had no treatment until 1911 (twelve years after infection), when he returned to the Good Samaritan Dispensary with gumma of the posterior pharyngeal wall. He received one arsphenamin injection and then disappeared from observation. Eight years later (Nov. 7, 1919, twenty years after infection) he reappeared presenting manifestations of the tongue of fourteen months' duration. Before that date he had received four intravenous arsphenamin injections and one intramuscular mercurial injection. After Nov. 7, 1919, he received three more intravenous neo-arsphenamin injections on November 7, 10 and 28. The blood serum reaction on November 11 was negative.

Diagnosis: Gumma of the tongue and epithelioma (?); left border and body of tongue; tip of tongue, especially left side (epithelioma?).

CONGENITAL SYPHILIS? SYPHILID POST EROSIVE? Presented by Dr. M. Scheer.

A colored male infant, aged 4, from Dr. Fordyce's clinic, had an eruption that had been present for three weeks. The lesions were located on the buttocks and were most numerous around the anus. They consisted of papules varying in size from one-sixteenth to one-quarter inch. The papules were quite dry; only a few were slightly eroded. There was no erythema. There were no other manifestations of syphilis. The child appeared well nourished and in good health. A Wassermann test was made, but the report had not been received.

The mother had three other living children. She had had no miscarriages, and stated that a Wassermann test made at the Sloane Maternity Hospital was negative.

DISCUSSION

Dr. O. L. Levin said that the presence of the tubercles, which showed a tendency to arrange themselves in circles and segments of circles, suggested syphilis. The eruption was limited to a small area and was not so widespread as Jacquet's erythema usually is—which at times may reach up to the neck or down to the heels. Besides, there was an absence of the erythema and moisture which accompanied the latter condition. In his opinion, it was a case of congenital syphilis.

Dr. W. J. Highman said he had seen the case for the first time that afternoon and he considered syphilis and Jacquet's disease. The eruption was sufficiently characteristic of the latter not to rule it out. Against the diagnosis of syphilis, was the history of the mother and the child's health, and the fact that there were no other signs of syphilis. Jacquet's disease was described by Parrot as closely simulating syphilis. At present no one could do more than make a tentative diagnosis. The lack of moisture was as strongly against syphilis as Jacquet's disease. So far as the extensiveness was concerned, the case answered all of Jacquet's requirements. The number of papules was against Jacquet's disease. It was not possible to make a differential diagnosis clinically, but in his opinion it was a case of Jacquet's disease rather than syphilis.

Dr. S. Pollitzer saw nothing in the case that suggested Jacquet's disease, which was an erythema with secondary accessory lesions. There was no erythema in this case. There were a number of papules well covered with epidermis on an apparently normal skin. That did not correspond with the érythème syphiloide post erosive of Sevestre and Jacquet. As to its being syphilis, it would be very astonishing to find a child of four months developing a group of syphilitic papules that looked as healthy as this one. An untreated syphilitic infant would show other signs—the nutrition would suffer and there would be other evidences of severe systemic disease. While it was true that the lesions did suggest syphilis rather than the erythema of Jacquet's disease, it would be surprising to have the child proved to be syphilitic. The diagnosis of syphilis would have to wait for a Wassermann test or the demonstration of spirochetes on the lesions.

Dr. W. J. Highman said that he had seen the case in daylight, and while he agreed with Dr. Pollitzer that in an individual of such complexion an erythema was difficult to detect, yet a certain amount of moisture could be observed in the lesions. About one tenth of the lesions were eroded.

Dr. S. Pollitzer replied that it was not a question of eroded papules, but of the erythema. Jacquet's disease was an erythema in the first place, and secondarily had eroded papules.

ICHTHYOSIS VULGARIS AND VON RECKLINGHAUSEN'S DISEASE. Presented by Dr. E. W. Abramowitz.

Angelo C., aged 9, of Italian parentage, was brought to Dr. Fordyce's clinic with a marked scaling and dryness of the skin of the entire body, with the exception of the face and flexures of the body. A younger brother had the disease in a milder form; the other members of the family were free from the disease. Brown pigmentations and small tumors were noted in Angelo, who seemed undernourished and mentally backward.

MULTIPLE BENIGN CYSTIC EPITHELIOMA. Presented by Dr. G. M. MacKee.

Matthew Z., aged 34, an Austrian, who had been in the United States thirty-three years, a painter, presented himself at Dr. Fordyce's clinic with an erythematous and vesicular eruption on the lower part of the abdomen, extending down to the knees (dermatitis venenata). Incidentally, there were noted on the lower eyelids and over the chest, especially around the nipples, numerous fawn-colored raised papules varying in size from pinhead lesions to larger ones. The patient had not noticed these lesions. Biopsy confirmed the diagnosis.

CASE FOR DIAGNOSIS. Presented by Dr. F. Wise.

The patient was a man, aged 21, seen in private practice. His sister died of tuberculosis, his father of asthma, and his mother of pneumonia. He had diphtheria and measles when a child.

About two weeks before, small red papules appeared on the back of his neck. These grew larger and gradually discharged pus. About a year and a half ago, small red papules appeared on the scrotal sac, which gradually grew larger. They were not painful, but discharged pus and failed to heal. At times they would cease discharging, and then would reopen. Gradually the scrotal sac grew much thickened and greatly enlarged, but at no time did the testicles appear to be swollen. The penis was greatly swollen and edematous. About a year ago a small lump appeared on the lower end of the tibiae, which increased in size. They were painless and not inflamed. Six months ago a rectal abscess appeared in the ischiorectal region. This was opened and had not stopped draining.

A general examination of the skin and scrotum revealed numerous pinhead to pea-sized abscesses. The Wassermann test was negative. *Staphylococcus aureus* grew in pure cultures from the pus. The von Pirquet test was negative. Examination for tubercle bacilli proved negative.

The patient had been treated with various salves, with incisions and autogenous vaccines, but without benefit.

DISCUSSION

Dr. G. M. MacKee suggested that the history might throw some light on the subject. As he understood it, the patient some time ago had some boils or abscesses around the genitals, one of which was incised and treated surgically, and about the same time he developed an edema of the scrotum which became so intense that a surgical operation was performed to relieve it. There was no question of the involvement of the testicles. The operation was not successful in that it did not heal by first intention and there had been sinuses ever since. It would seem now to be a streptococcic or staphylococcic infection.

SYPHILIS TUBERCULO-VERRUCOSA. Presented by Dr. B. Lapowski.

Mrs. D. F., was presented at the meeting on November 5 as a case of syphilis tuberculo verrucosa. It was suggested then that in order to prove the diagnosis of syphilis the patient be treated only internally antispecifically, without any local applications. She received three intramuscular injections of calomel on November 6, 15 and 22. No local applications were made. The blood serum reaction was tested twice and in both instances the laboratory report was "Substance in the blood which prevents testing." (B. of H.)

Since the last presentation the lesions had diminished greatly, being flattened, less pronounced, and smaller in size. Dr. Lapowski said that in his

opinion this improvement under treated supported his diagnosis of syphilis. The patient could not submit to more energetic treatment as she had to work for her living. The two reports of the board of health as to the condition of the blood claimed the increase of a foreign substance which interfered with the reaction.

DISCUSSION

Dr. F. Wise said that the evidence pointed to the assumption that Dr. Lapowski was right in his diagnosis, if one could judge by the therapeutic test. It would be more desirable, however, if the diagnosis were fortified by a positive Wassermann test and a microscopic specimen of the affected tissues. It was not impossible that the calomel injections favorably influenced a cutaneous tuberculosis.

Dr. S. Pollitzer asked whether arsphenamin or mercury was given, and on being told that it was calomel, he stated that he was one of those who had agreed with the diagnosis of syphilis but it was well known that calomel improves tuberculous lesions of the skin. The condition presented tonight still left the question a little undecided, so far as the proof from treatment was concerned. Arsphenamin would have no effect on a tuberculous lesion.

Dr. W. J. Highman said that he also had agreed with Dr. Lapowski's diagnosis, and the interval of a month had not changed his opinion. The evidence which Dr. Lapowski had brought to bear on the case in the last four weeks more than corroborated the diagnosis. He was sure that if mercurial treatment could beneficially influence tuberculosis cutis it would do so as rapidly as in syphilis. So far as it had gone, the therapeutic test was of great value.

Dr. O. L. Levin said that he had seen a case on the service of Dr. Gottheil at the City Hospital, showing large areas of tubercles and ulcerations of the thighs, buttocks and perineum which improved under injections of mercury. The biopsy did not aid in differentiating between tuberculosis and syphilis, and the Wassermann reaction was negative. Subsequent observation proved the condition to be tuberculous.

Dr. B. Lapowski said he would present the case again after calomel treatment, and would try to submit a blood test also. He felt confident that the patient would not show any lesions.

ERYTHEMA SOLARE PERSTANS? LUPUS ERYTHEMATOUS DISSEMINATUS? Presented by Dr. L. Chargin.

H. H., a young woman, aged 18, single, had had the affection for five months. They followed immediately on exposure to the sun in the course of a sea bath. The affection was limited to the parts exposed in bathing—involving the entire face except an area underneath the lower lip; the ears, the sides, front and back of neck, except the upper part in front where the sun's rays were obstructed by the chin; the upper chest, front and back, down to where the bathing suit covered the chest; the outer upper arms and outer forearms, with a few isolated small areas on the backs of both hands and fingers. The eruption on the face was uniformly red and slightly edematous. The redness on the chest and arms was not quite so marked. There was some scaling and the skin was quite dry. The patient stated that an occasional crop of blisters appeared on the face—there had been perhaps three or four such attacks in the last five months. No atrophy was to be observed on any of the affected areas. On the forearms and hands were areas of telangiectasia. There were few, if any, subjective

or constitutional symptoms. The patient stated that on several occasions she was sunburned which invariably resulted in blister formation but no permanent redness. She was otherwise quite well. Suggestions as to treatment were requested.

DISCUSSION

Dr. G. M. MacKee regarded the case as one of lupus erythematosus disseminatus. It was not unusual to have an exacerbation or a remission of lupus erythematosus following prolonged exposure to sunlight. The diagnosis of lupus was based on the delicate telangiectasia and fine adherent scales. The absence of atrophy did not negative the diagnosis. In regard to treatment, these superficial types of lupus erythematosus not infrequently disappeared under the application of such simple remedies as lotio alba.

Dr. S. Pollitzer said the case impressed him as being the persisting effects of erythema solare, and not lupus erythematosus. Certain skins were peculiarly susceptible to sunlight and reacted to it in an extraordinary manner. He had seen a case of severe erythema lasting for a number of months following a moderate exposure to the ultra-violet light. The young woman told him that she had been in bathing at the seashore, and that in previous years she would blister easily; that was the history usually given in those cases that are very sensitive to the ultra-violet rays or to sunlight. There might be a moderate reaction from one exposure and a greater from another, and a severe reaction from a third. Some skins do not become "tanned" or pigmented after exposure, but on the contrary seem to develop a greater sensitiveness to light. The fact that these lesions occurred just where the patient was exposed, and nowhere else, made solar erythema the obvious diagnosis. As to treatment, the patient should never expose herself to the direct sunlight, and should wear a brown veil to keep off the sun; at night she should use a thin paste containing ichthyol.

Dr. F. Wise said it was a surprise to him to hear Dr. Pollitzer say that the eruption was not lupus erythematosus, since it so closely resembled a case that he had sent to the doctor's office recently in consultation. This girl had lesions on the palms, and she could not very well become sunburned on the palms. In his opinion, there was no doubt that it was a case of lupus erythematosus disseminatus. As to treatment, he advised the use of wet dressings, as suggested by Dr. Pollitzer in the case of the patient just referred to.

Dr. W. J. Chargin said he understood lupus erythematosus disseminatus to be a disease which developed, as a rule, in small sized patches, more or less disseminated and with a tendency to central atrophy or depression—the eruption coming and going and being frequently accompanied by constitutional symptoms, none of which was shown by this patient. The condition in this young girl seemed to be akin to a roentgen-ray dermatitis, which perhaps would explain the telangiectasia presented on the forearms and hands.

PIGMENTATION WITH ATROPHODERMA ON THE RIGHT THIGH.

Presented by Dr. G. M. MacKee.

Stella G., aged 21, a candymaker, presented herself at Dr. Fordyce's clinic stating that she had noticed a change in the appearance of her skin for the past eight years. There was a general displacement of the skin pigment, leaving areas of depigmentation, the size of a five-cent piece and larger, among larger hyperpigmented patches. In some places the appearance of a livido reticulata was to be thought of. The veins were easily visible, in spite of no

change in the thickness of the skin. The pigmentation was most marked in the axillae and on the abdomen. There were atrophic areas on the back and on the rest of the trunk, but they were all small. The thighs showed the same displacement of pigment. There was a mild keratosis pilaris. The patient gave a history of frequent nosebleed during childhood. There was a patch of atrophoderma on the inner side of the right thigh, about 2 inches in diameter.

DISCUSSION

DR. O. L. LEVIN said the case impressed him as the most interesting one presented during the evening. There were some patches of atrophy on the thighs and back, which might be a coincidence. The prominent vessels seemed to be simply dilated vessels on the surface of the skin. There seemed to be no atrophy of the skin over the vessels. Besides the pigmentation and dilated vessels, there was a purplish-red discoloration of the skin of the hands and fingers, a loss of the outer third of the eyebrows, a pulse rate of less than 60, and a prominent soft thyroid which might be cystic. The whole picture was that of faulty oxygenation, nutrition and metabolism, with a poor cardiovascular tone. All the skin lesions seemed to be cutaneous manifestations of faulty function of the glands of internal secretion.

DR. C. M. WILLIAMS said that below the elbow was a patch of atrophic skin in which the veins were very prominent, then a patch of normal skin, and then another patch of atrophic skin with prominent veins. He could not conceive of any interference with circulation central or peripheral, causing such an alternation of prominent and concealed veins.

DR. F. WISE expressed the opinion that Dr. Levin had given the correct interpretation of the patient's symptoms, although he failed to offer a diagnosis. It certainly was an atrophoderma, whether due to a thyroid disturbance or not he could not say.

DR. O. L. LEVIN said he had not meant to convey the impression that the prominent vessels were a result of mechanical interference. They were prominent merely because of a dilatation and fulness resulting from a poor tone of the circulation.

ERYTHEMA PERSTANS. Presented by DR. A. J. GILMOUR.

The patient, J. L., was a white unmarried woman, aged 17, a machine operator, born in the United States. One year ago a swelling appeared on the back of the first phalanx and the little finger of the left hand; at first this would entirely disappear and then reappear. During the first four months a redness and swelling was permanently present. At times there had been exacerbation, an erythematous wheal-like swelling appearing. Other lesions appeared four months ago which have persisted. One started as a papule on the back of the left hand; this lesion gradually spread, forming a ring which increased to a diameter of 2 inches. Another papule made its appearance on the upper outer side of the right arm, 1 inch below the shoulder, and extended transversely across the arm 3 inches. This wheal-like lesion was ½ inch in width and was raised above the surface ¼ inch. This linear lesion had a concavity downward. A second ring, 1¼ inches in diameter, was situated on the anterior surface of the right arm, a little above the bend of the elbow. A small transverse lesion stretched across the arm just below this ring. These lesions were white and wheal-like on the outer circumference of the ring, changing to a red color on the inner surface of the ring. The inner circum-

ference of the ring presented the appearance of the broken down vesicles seen in ringworm of the body. Except for a slight anemia, the patient's health was apparently good. The only symptom complained of was a slight itching.

DISCUSSION

Dr. G. M. MacKee said it was well, in cases of erythema perstans, especially when localized, to exclude the possibility of dermatitis medicamentosa; also lupus erythematosus.

Dr. I. M. Brenner asked if there was any systemic condition in the patient —any cardiac condition. He had noticed a peculiar clubbing of the fingers, looking almost like the cardiac type, and had wondered if there was any connection between the two conditions.

Dr. W. J. Chargin reported on the case of syphilitic reinfection presented at the October meeting. The patient had showed a negative Wassermann at the time of presentation; this became +++ during the following week, and was further confirmed by a ++++ a week later. He had since been under active treatment, and was now clinically and serologically negative.

Dr. S. Pollitzer said it was worth while to recall Dr. Chargin's case. The patient had acquired syphilis three years ago, had received active treatment and had a negative Wassermann reaction. Three years later, about two weeks after exposure, he presented a lesion on the penis that looked like a chancre and showed spirochetes on examination. At that time, his Wassermann reaction, repeated several times, was negative. A few weeks later he developed a cutaneous eruption scattered over the trunk, and the Wassermann test taken at that time, just before the case was presented last month, had not been reported on. The speaker predicted that it would be positive, and we hear tonight that it was positive. It was difficult to see what more could be asked in the way of proof of a syphilitic reinfection. The case reported by Dr. Rosen was not so clear cut because the patient came back with lesions that might have been a recurrence of the old syphilis.

MANHATTAN DERMATOLOGICAL SOCIETY

Regular Meeting, Nov. 11, 1919

Paul E. Bechet, M.D., *Chairman*

PAPULO-NECROTIC TUBERCULID. Presented by Dr. I. Rosen.

Mrs. S., aged 27, was born in Russia. Her family history was negative for tuberculosis. Both parents were living; she also had two brothers and three sisters, all of them well. The condition for which she was presented began about five years ago with an eruption on the fingers. At first she noticed small, isolated lesions which on first appearance were red; then they became raised and infiltrated, acquiring a greenish head which would dry up. Removal of the crust would reveal a scar. After a time the forearms were affected with similar lesions, taking the same course.

On examination, the patient presented a typical papulonecrotic eruption on the forearms and hands. The lesions were in all stages of development, some showing the pustules with central necrosis, others covered with crusts. Scattered over the entire surface of the forearms and hands were superficial scars.

EXTENSIVE LUPUS ERYTHEMATOSUS SHOWING RESULT OF REPEATED APPLICATIONS OF 95 PER CENT. PHENOL SOLUTION. Presented by Dr. P. E. Bechet.

J. O., a private patient, aged 45, stated that the eruption began twenty years before. When he was first seen on April 8, 1919, he presented an enormously hypertrophied, severe and extensive type of lupus erythematosus. The disease covered the entire face, the ears and the side of the neck. The only part of the face free from the eruption was the forehead; there was not the slightest trace of healthy skin on any other part of the face. Scaling was very extensive, the scales being markedly adherent. The case was as severe a type as the presenter had seen. The patient was so disfigured that it was impossible for him to retain a position. He had had ten paintings on either side of the face with 95 per cent. phenol, the acid being rubbed in thoroughly by means of a small toothpick swab once every two weeks and allowed to dry without neutralization. He had also had applications of lotio alba, and iodoform pills internally. The acid was not applied to the neck. As could be seen, the disease had markedly improved. The scales had disappeared, the remaining lesions were very superficial, there were a number of entirely healed areas of healthy skin scattered over both cheeks, and the cosmetic result seemed excellent for the scarring was so slight as to be scarcely noticeable. The disease was of course still active, but the presenter considered that the rapid improvement following the applications of phenol warranted him in showing the case. He had made use of phenol in other dermatoses in which a mildly destructive agent was indicated, with uniformly good results. Its value in dermatologic practice was not sufficiently realized.

ERYTHEMA PERSTANS. Presented by Dr. A. J. Gilmour.

The patient was a young white girl, an operator. A year before she noticed a red swelling on the little finger of the left hand; it began as a spot and became a ring.

DISCUSSION

Dr. F. Wise said that the lesions were about the same as those in a case a description of which he had published not long ago, only they were more pronounced and pigmented in the former patient. The consistency of the lesions, their color and configuration closely conformed to the class of diseases known as erythema figuratum perstans.

Dr. Howard Fox recalled a similar though much more extensive case presented by Dr. Robinson, in which the lesions persisted for at least eight months.

Dr. G. M. MacKee said that in all cases of erythema perstans it would be a good idea to interrogate the patient carefully, to ascertain whether the eruption might represent a dermatitis medicamentosa.

Dr. I. Rosen said that the case did not coincide with his idea of erythema perstans. While there might be raised or infiltrated erythematous lesions in erythema perstans, they all left pigmentation in the process of evolution. He saw no evidence of pigmentation in this case.

Dr. G. M. MacKee said there was no precedent for Dr. Rosen's objection to the use of the word erythema. There was a large number of diseases whose generic name was erythema, in which the erythema was but one objective symptom. He expressed appreciation of the reason for, and the value of, Dr. Rosen's remarks, but after all, names were simply a means of designation and

identification, and if they were constantly altered we would be in perpetual chaos. In erythema toxicum and erythema scarlatiniforme there was erythema only. In erythema multiforme there might be erythema, edema, vesiculation and bullous formation; in erythema nodosum there were nodules; in erythema induratum there were ulcers. Erythema elevatum diutinum was considered by many to be similar, if not identical with, granuloma annulare.

Dr. A. J. Gilmour said that Wende described cases of erythema figurans induratum; they might come under that class, only there were three types—semicircular, striate lesions ,and rings. He had noticed that the top of the ring on the hand of this patient was more whitish red, while the lower part had turned bluish.

MILIUM WITH CALCAREOUS DEGENERATION. Presented by Dr. A. J. Gilmour.

A girl, aged 19, a stenographer, and unmarried, who was under treatment for acne, had noticed two months ago a white spot on the back of the right hand. This spot was gradually growing larger. Dr. Gilmour said he would report on the case at the next meeting.

PITYRIASIS LICHENOIDES CHRONICA. Presented by Dr. F. Wise.

A married woman, aged 48, from Dr. Fordyce's clinic, an Austrian by birth, presented a rash which was characteristic of secondary syphilis in point of clinical appearance, but no concomitant lesions of syphilis were found. She had had four negative Wassermann reactions. She exhibited a maculopapular eruption which had been diagnosticated as pityriasis lichenoides chronica. The patient applied for treatment of acute eczema of the legs, of recent appearance, and seemed to be entirely unaware of the eruption on the trunk. The duration of the lesions on the trunk was unknown.

DISCUSSION

Dr. G. M. MacKee found it difficult to accept a diagnosis of pityriasis lichenoides chronica. In this disease the papules were permanent, or at least they endured for many years, and they suggested the papules of lichen planus. The disease was slowly progressive, and there were no subjective symptoms. As far as could be ascertained in the present case, the eruption was rather rapid in development, was inflammatory in type, the papules were situated in the follicular orifices, and there was itching. There was also some perifollicular dermatitis and the eruption was most marked on the lower trunk, the buttocks and thighs. These were not the sites of predilection for parapsoriasis lichenoides. Furthermore, while it was difficult to obtain a confirmatory history from the patient, the eruption appeared to be composed of lesions that were evolving and those that were undergoing involution—in other words, a recurrent eruption. In addition, there were the remains of a chronic eczema of the legs, which the patient stated had been exudative.

The speaker suggested the diagnosis of a follicular dermatitis secondary to an exudative dermatitis of the legs—a dermatitis or eczema of the type called by Engman and by Fordyce, infectious eczematoid dermatitis.

Dr. P. E. Bechet said that the lesions on the leg resembled pityriasis much more than did those on the trunk.

ULERYTHEMA OPHRYOGENES. Presented by DR. I. ROSEN.

Mrs. G., a married woman, aged 58, born in Russia, had seven living children. The family history was negative in regard to any similar condition. The patient gave an indifferent history as to the time of onset; in fact she did not seek treatment or advice for the lesions on the eyebrows.

Both eyebrows were affected, showing an erythematous base, noninflammatory in character and interspersed with telangiectatic blood vessels. There was a distinct loss of the hairs of the eyebrows due to atrophic areas which were probably caused by a preceding folliculitis. The patient complained of no subjective symptoms.

DISCUSSION

DR. G. M. MACKEE remarked that it seemed to be the end stage of the eruption. The folliculitis and hyperkeratosis had disappeared to a large extent, leaving an erythema and atrophy. The term ulerythema signified erythema and scarring.

CASE FOR DIAGNOSIS (RINGWORM?). Presented by DR. O. L. LEVIN.

A. Z., a schoolgirl, aged 15, was born in Russia and had been in this country for five years. She applied for treatment on the service of Dr. Whitehouse at the Post-Graduate Clinic. She complained of an itchy, scaly condition which was of one year's duration. On examination, the scalp showed a thick layer of dirty white scales on an inflammatory base. The hairs were not diseased and there were no areas of alopecia. Extending down the forehead from the hairline to the eyebrows was a dark red eruption, not elevated and slightly scaly. The inferior border was distinctly elevated, about one-sixteenth inch wide, papular in character and festooned. This extended posteriorly over the temporal regions, the neck and mastoid regions. On the neck and behind the auricles were circinate lesions resembling in general appearance the eruption on the forehead. Scales removed from the forehead showed the presence of sporelike bodies.

DISCUSSION

DR. G. M. MACKEE said that if Dr. Levin had found numerous spores and if the microscopic picture were typical, we were viewing an unusual and interesting example of ringworm of the skin. On the other hand, from a clinical point of view, the eruption impressed the speaker as representing the circinate type of seborrheic dermatitis. There was a striated pityriasis of the scalp, loss of hair, and the skin eruption appeared to be intimately associated with that of the scalp. The speaker called attention to the fact that spores could frequently be demonstrated in the scabs from various eruptions, the spores being accidental contaminations, nonpathogenic or perhaps fat droplets. Unless the microscopic picture was typical, the speaker would hesitate to accept a diagnosis of tenia circinata.

DR. O. L. LEVIN said that when he presented the case he distinctly stated that the specimens from the lesions had shown sporelike bodies. He refused to make a positive finding of spores in any specimen of scales, crusts, or hairs unless the suspected bodies were very numerous and mycelia were present. However, he would try the fungi in Sabouraud's medium.

When the patient was first seen the day before he had regarded the case one of seborrheic eczema, but after closer examination he favored the diag-

nosis of ringworm on account of the festooned border, the dry scales, and the circinate lesions. Ringworm of the scalp was rare in persons after puberty, but might not this patient represent a type of eruption which may appear during that period in which the scalp is acquiring an immunity against the ringworm fungus?

DISCUSSION

Dr. Howard Fox said that the age of the patient was strongly against the diagnosis of tinea. It was well known that tinea of the scalp was extremely rare in a person who had reached the age of puberty. He had heard the late Dr. Jackson remark that he had seen only one such case during his life.

LICHEN SCROFULOSORUM. Presented by Dr. Howard Fox.

James D., a negro, aged 32, born in the United States, a tailor, whose father died of "throat trouble," one brother of consumption, and whose mother and two sisters were living and in fair health, did not remember having suffered from any children's diseases. He stated that he "took cold easily and seemed never to get rid of it." He suffered from night sweats and had lost 6 pounds in the last ten months. He complained of being very nervous. The eruption first appeared five years before, the lesions gradually making their appearance. New lesions, he said, appeared every summer, some of them disappearing in winter. He stated that the lesions caused a little itching in the summer.

Examination showed an eruption on the chest of about 200 small, pinhead sized, rounded, firm, noninflammatory discrete papules. There was no evidence of scratching and no appreciable scaling. The color was yellowish-brown, of a darker shade than the normal skin. The patient appeared to be a full-blooded negro of brownish color. The eruption was confined to the chest, the lesions forming a large semicircle with the convexity upward. The center of the chest was free. An examination for tuberculosis made by Dr. Moak of the Harlem Hospital showed the following result: "Bronchovesicular breathing at right apex; exaggerated vocal fremitus of same side. Temperature, 99; pulse, 94. Eight pounds below normal weight. Sputum negative." The report of a biopsy had not been received.

DISCUSSION

Dr. F. Wise said that the lesions of lichen scrofulosorum were generally arranged crescentically. They were usually composed of scaly papules and showed more erythema or inflammation than did the ones presented in Dr. Fox's case. He did not consider this a case of lichen scrofulosorum, although he could offer no better diagnosis.

Dr. G. M. MacKee thought that a diagnosis of lichen scrofulosorum might well be considered. The eruption was chronic, it consisted of tiny follicular papules, and occurred in a tuberculous subject. He was unable, however, to make a clinical diagnosis and hoped that the tissue could be examined microscopically.

Dr. I. Rosen said he had seen a few cases of lichen scrofulosorum, but could not consider that diagnosis in this instance. Lichen scrofulosorum was more generalized, the eruption usually occurring in groups, the individual lesions being smaller, yellowish-red, capped with a delicate scale which on removal disclosed a superficial scar.

Dr. F. J. Ochs said there was a distinct tendency to grouping in this case. Groups were found in the axillae, over the right nipple, and directly in the center of the chest there was more of a tendency to grouping than in any other place. He agreed with the diagnosis. As to the color of the lesions, they were more brown than red. The color scheme in a colored person was easily recognized, if one forgot the color. Each of the papules had a distinct brownish halo with a tendency to grouping, but at the moment there was no tendency to scaling. In lichen scrofulosorum it was not necessary for scaling to appear in the early stage of the disease; that might or might not come later. The patient stated that he had had the condition for five years, but his history was very indefinite. New lesions were appearing at the top of the sternum, and they were in groups. He accepted the diagnosis, but would await the biopsy report.

Dr. P. E. Bechet agreed with Dr. F. Wise. A point against the diagnosis was the localization of the lesions—they were confined entirely to the chest, a favorite location for acneiform lesions; they were of a uniform development and resembled atypical milia. It appeared to him that there was a sebaceous element in the causation of the lesions. He had seen only one case of lichen scrofulosorum, and in that patient the lesions were located on either side of the abdomen and were in various stages of evolution and involution. The child had a generalized tuberculosis and was very cachectic. The patient shown by Dr. Fox seemed to be in good health.

Dr. Howard Fox thought that the uniformity in the type of the lesions was rather in favor of than against the diagnosis of lichen scrofulosorum. He was sure that if Dr. Wise had seen the case by daylight, as he had, Dr. Wise would admit that there was no evidence whatever of any inflammatory action. The lesions were indolent and had persisted for years. The speaker was aware that the lesions were usually found on the sides of the trunk, but did not think this ruled out the possibility of lichen scrofulosorum. He felt that a rare condition was being discussed from extremely limited clinical experience. While not uncommon in Europe, this disease appeared to be extremely rare in the United States. As soon as the histologic examination was made the diagnosis would probably be settled.

DERMATITIS MEDICAMENTOSA. Presented by Dr. I. Rosen.

Mr. R., aged 25, consulted the Mount Sinai Dermatological Clinic for an eruption on his chest and abdomen, the eruption having been present for three days. Examination revealed a grouped vesicopapular eruption involving the front of the entire chest and entire abdomen. Some of the lesions were hemorrhagic. This eruption made its appearance suddenly and did not spread to other parts of the body after its initial appearance. The only symptom complained of was slight itching. On being questioned, the patient stated that he had been constipated and had taken two phenolphthalein tablets two days prior to the appearance of the skin eruption.

DISCUSSION

Several of the members agreed that it was a pityriasis rosea.

Dr. Howard Fox was inclined to agree with the other members that the case was one of pityriasis rosea. He had had one well marked case of an

eruption following the ingestion of Ex-lax. The eruption in this case appeared as well defined, sharply demarcated erythematous plaques which after disappearing left brownish pigmentation, which lasted for months.

Dr. I. Rosen said he could not blame some of the members for making a diagnosis of pityriasis rosea at the time of presentation, because some of the lesions might resemble that disease on account of the application of ointment. However, the diagnosis of dermatitis medicamentosa would not be doubted if the case had been seen at its onset. The sudden outbreak of the small vesicopapular lesions, involving the chest and abdomen, the absence of the yellowish-red, scaly lesions that are so characteristic of pityriasis rosea, the limitation of the eruption to the site of its first appearance without any tendency to spread to the other parts of the body, would rule out pityriasis rosea.

DISCUSSION

Dr. B. J. Ochs said the patient stated that the first eruption came out directly in the center of the abdomen. Eruptions then appeared on the back and later on other sites.

CASE FOR DIAGNOSIS. Presented by Dr. P. E. Bechet.

A male, aged 63, from Dr. Trimble's clinic, stated that he had first noticed the lesions three years before. He presented for inspection two plaques, one over the left buttock and the other in the left lumbar region. Both lesions were approximately from 3.5 to 4 mm. in area, were markedly infiltrated and indurated, presented sharply defined borders, and were bright red. The edges of the one on the buttock seemed to be sharply rolled up. There was an absence of ulceration, scaling, and atrophy. A biopsy had been made and a section casually examined by Dr. J. F. Fraser, who stated to the presenter that the specimen required further study, but was, in his opinion, neither tuberculous nor epitheliomatous. The slide was submitted for inspection.

DISCUSSION

Dr. H. Fox said that clinically it looked like a case of psoriasis.

Dr. F. Wise thought it was psoriasis.

Dr. O. L. Levin stated that he had seen the section from a lesion and the microscopic picture suggested psoriasis, parapsoriasis or pityriasis rosea. The presence of the broad acanthotic pegs, all reaching down to about the same level, led him to decide in favor of psoriasis. On seeing the lesions on the patient's trunk—thickened, blood red, and covered with a thick layer of white scales—he believed that the microscopic appearance confirmed the clinical diagnosis of psoriasis.

Dr. L. B. Mount thought both clinically and microscopically it had been proved to be psoriasis.

Dr. A. J. Gilmour said there was a suggestion of psoriasis on the man's knees, but he had stated that in his work he was on his knees considerably.

Dr. P. E. Bechet agreed with the diagnosis of psoriasis because of the histologic appearance of the section, but it seemed to him that clinically the case did not resemble psoriasis. The lesions had been present for three years, there was no scaling, the lesion over the buttock had apparently a rolled up edge and in appearance was not unlike the flat, morphea-like epitheliomas.

Dr. G. M. MacKee agreed with Dr. Levin. Histologically, the case was psoriasis. Throughout most of the section there was an acanthosis with anastomoses of the rete pegs forming the solid plate so often seen in the inveterate type of the disease. One end of the section showed the typical elongated papillae of early psoriasis, also a Monroe abscess. In addition to these patches there was a parakeratosis and a mild inflammatory reaction in the upper derma. Epithelioma could be definitely ruled out.

Clinically also the eruption resembled psoriasis. The lesions were sharply marginated and covered with dry scabs. The fact that two lesions had existed for years was not unique, as individual lesions of psoriasis had been observed on localized areas, such as the penis, hands, etc., for months and years before the eruption appeared on other parts of the body. In addition to the lesions on the abdomen, the speaker called attention to the eruption in the crural region—indefinitely outlined erythema with waxy scales—which might be either psoriasis or seborrheic dermatitis.

MULTIPLE BENIGN CYSTIC EPITHELIOMA AND SYRINGOMA. Presented by Dr. F. Wise.

A young man, who had appeared on the day of presentation at the Vanderbilt clinic for the first time, presented many small lesions on the chest—flat papular lesions, some the color of the skin and some darker, averaging one-eighth inch in diameter. Some of those on the face, neck and chest had been there since childhood. There were a few lesions on the abdomen. On the cheeks, beneath the eyes, there were many millet-seed sized papules. A biopsy had been made on one of the chest papules, revealing the typical structure of syringoma.

DISCUSSION

Drs. G. M. MacKee and H. Fox agreed with the diagnosis.

MULTIPLE VERRUCAE. Presented by Dr. L. Oulmann.

A Porto Rican mulatto, aged 36, presented on his legs and on the dorsa of his feet numerous cauliflower-like pigmented, warty excrescences, while on the plantae of the feet horny, circumscribed lesions had developed which were less pigmented, shiny and contained fissures. These horny masses varied in size from that of a dime to that of a 50-cent piece, and the lesions were raised in nut shape, according to size. On the dorsum of the feet were numerous cauliflower lesions consisting of bunches of cutaneous horn-like growths which were hard, almost black at the ends and from one-quarter to one-half inch in length. The masses were also present on the legs—though more sparingly—on both the extensor and flexor sides. There was one small lesion on the left thigh, consisting of three to four branches. The lesions on the lower extremities had existed for twelve years, while on the upper extremities and from under the nails smaller lesions in moderate amount had developed during the last ten years. The warts seemed to be of a keratotic nature and to form a hard callus on the soles owing to the pressure, which prevented the condyloma acuminatum-like expansion. Dr. Oulmann said he had seen the patient for the first time on the previous day and hoped to be able to follow up the case, and to have moulages, a biopsy, and photographs made of it.

DISCUSSION

Dr. G. M. MacKee said there were several conditions that might be associated with extensive warty lesions. Very thick, warty lesions were seen occasionally in Darier's disease, but in this instance there were no other evi-

dences of keratosis follicularis. Keratoderma palmaris et plantaris and the mal de maleda might at least be considered. In this connection, both the verrucous nevus and ichthyosis hystrix at times presented keratotic lesions of enormous thickness. A bilateral and even symmetrical distribution would not necessarily rule out the possibility of nevus. The tropical disease, verruca peruana, might be considered if the patient had been in a warm climate. The speaker also mentioned keratoderma blennorrhagica as a possible diagnosis.

Dr. F. Wise said that he would diagnose the case as warts.

Dr. Howard Fox thought that lichen planus should also be considered in the list of diseases in which verrucous lesions appeared. In this very unusual case there were a number of papules on the dorsum of the foot which were suggestive of lichen planus.

Dr. P. E. Bechet did not think it was Darier's disease. The scalp and body were free from eruptions. There was no hyperkeratosis of the palms and soles. There were typical verrucae beneath the nails of several fingers and on the palms. He was at a loss for a diagnosis.

Dr. O. L. Levin said that the hyperkeratosis apparently began on the feet whence it spread to the other parts. The condition suggested some infectious agent as the cause, and that the lesions under the nails depended on the inoculation of the skin during scratching. He did not approve calling the lesions papillomatous because there was apparently only an increased growth of the cells of the stratum corneum and not an overgrowth of the papillary bodies.

MINNESOTA DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 9, 1919

S. E. Sweitzer, M.D., *President*

GRANULOMA PYOGENICUM OF THE LIP. Presented by Dr. S. E. Sweitzer.

A man, aged 57, presented, on the lower lip, a small elevated lesion the size of a split pea, that was rapidly disappearing under mild treatment.

PITYRIASIS LICHENOIDES CHRONICA. Presented by Dr. H. E. Michelson.

A young lady, aged 25, acquired syphilis three years ago. During the past eighteen months she has received thorough treatment. About six months ago the present macular, slightly scaling eruption appeared over the trunk. The patient does not complain of itching. Some of the lesions are follicular and show a resemblance to lichen planus.

DISCUSSION

Dr. G. M. Olson called attention to the fact that this patient belonged especially to the group of parapsoriasis known as pityriasis lichenoides chronica, as there is a marked resemblance to pityriasis rosea and lichen planus.

EXTENSIVE BLASTOMYCOSIS OF THE ARM. Presented by Dr. J. Butler, Jr.

A man, aged 55, was first seen by Dr. Butler about two years ago. At that time the blastomycosis was limited to the back of the left hand. He improved and finally discontinued further treatment. At the time of presentation he showed large ulcers on the hand and a large circular ulcer on the left forearm.

DISCUSSION

Dr. F. R. Wright advised amputation of the forearm above the ulcer, as even though the ulcers were healed, the scarring resulting from the healing and contraction of the large circular ulcer would render the hand and forearm useless.

PSORIASIS AND LEUKOPLAKIA. Presented by Dr. H. G. Irvine.

J. M., aged 55, married, and having eight healthy children, had suffered from psoriasis in the form of scaly lesions on the arms and legs for the past seventeen years. At the time of presentation he showed marked lesions of leukoplakia. Formerly he had been a heavy smoker, but practically stopped smoking several months ago. History of syphilis was negative as were two Wassermann tests. The patient was presented to show the possible association of psoriasis and leukoplakia.

DISCUSSION

Most of the members thought the association of psoriasis and leukoplakia was a coincidence although they noted the rare presence of psoriasis of the mouth.

THRUSH. Presented by Dr. G. M. Olson.

A girl, aged 5, had previously suffered from an extensive impetigo contagiosa which had healed. The lesions on the labial commissures, mouth pouches and tongue had been treated as perleche, with poor to indifferent success. Microscopic examination had shown the presence of many fine mycelia and spores, and alkaline treatment had resulted in marked improvement.

EXTRAGENITAL CHANCRE OF MUCOUS MEMBRANE OF CHEEK. Presented by Dr. G. M. Olson.

A man, aged 29, denied exposure, either through sexual intercourse or kissing, for the past eight months. Previous to that time he stated that he had not infrequently been exposed to venereal disease. During the past eight months he had been at work in the lumber camps. Infection probably resulted from the drinking cup or eating utensils.

SYPHILITIC ERUPTION RESEMBLING HERPES. Presented by Dr. H. E. Michelson.

The papular and pustular eruption of syphilids in this man, aged 33, along the course of the fifth intercostal nerve showed a marked resemblance to herpes zoster.

PIGMENTED MOLE. Presented by Dr. J. M. Armstrong.

A young lady, aged 19, had a large pigmented mole on the side of the right ala nasi. The mole was elevated about an eighth of an inch, and contained many fine gray hairs. The patient was presented to show the excellent result following the use of carbon dioxid snow. Two applications of four minutes each were sufficient to cause entire disappearance of the mole, with beautiful cosmetic results.

ACROMEGALY. Presented by Dr. J. M. Armstrong.

A man, aged 43, noted the first symptoms in 1896. They consisted of enlargement of the hands and feet and changed facial expression and outline. The skin of the face and head was thickened and hypertrophied, although not rough. Deep furrows occurred over the frontal region, and there was an enormous thickening of the upper and lower eyelids. The nails showed longitudinal striation.

LEPROSY. Report of case by Dr. J. M. Armstrong.

A man, aged 53, a carpenter, born in Sweden, first noticed the eruption of leprosy twenty years ago, five years after he arrived in this country. The lepra bacillus was found in the lesions. He had taken very large doses of chaulmoogra oil and strychnin, apparently with benefit, as all lesions had disappeared, with the exception of enlargement of the ulnar nerves and thinning of the eyebrows.

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